
FLOW —of— FUNDS ANALYSIS

A Handbook
for Practitioners

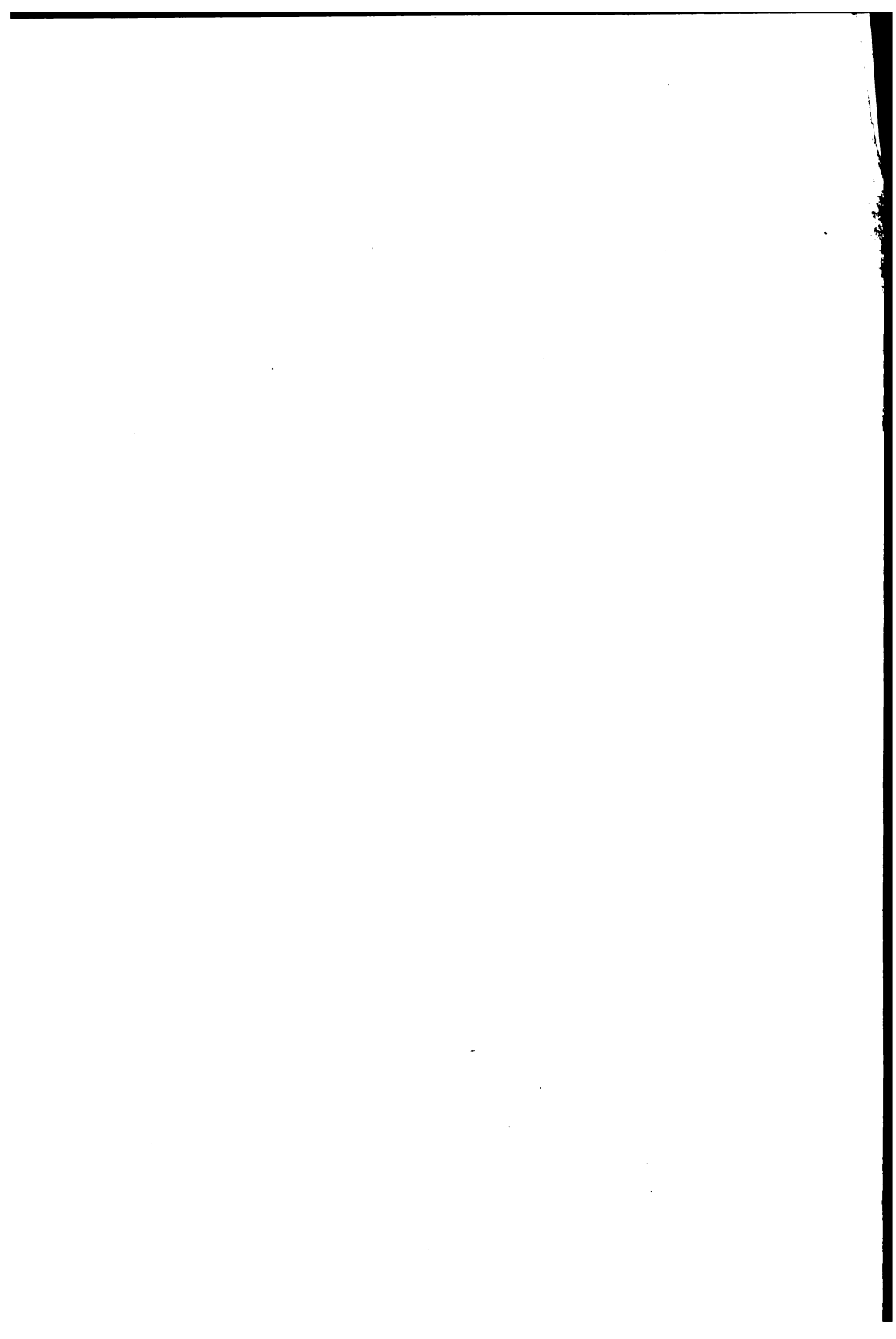
John C. Dawson
Editor

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John C. Dawson
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To Steve Taylor

Prodigious inquirer, Devoted civil servant, Steadfast friend

Contents

List of Tables and Figures	xiii
Foreword by <i>Benjamin M. Friedman</i>	xxv
Preface	xxix
Acknowledgments	xxxi
List of Authors	xxxiii

PART I PRESENTING THE FLOW-OF-FUNDS ACCOUNTS

Introduction to Part I	3
1. Social Accounting for Moneyflows <i>Morris A. Copeland (1949)</i>	7
2. Concept of the Flow-of-Funds Accounts <i>Board of Governors of the Federal Reserve System (1975)</i>	19
3. Overview, Organization, and Uses of the Present U.S. Accounts <i>Board of Governors of the Federal Reserve System (1993)</i>	49

PART II ORIGIN AND EVOLUTION OF THE ACCOUNTS

Introduction to Part II	79
4. Institutional Origins <i>James R. Millar (1991)</i>	83
5. Copeland as Social Accountant <i>John C. Dawson (1991)</i>	93
6. From Moneyflows Accounts to Flow-of-Funds Accounts <i>Stephen P. Taylor (1991)</i>	101

PART III
FLOW-OF-FUNDS DIDACTICS

Introduction to Part III	111
7. A Framework for Financial Analysis <i>Lawrence S. Ritter (1963)</i>	115
8. Moneyflows and Business Fluctuations <i>Morris A. Copeland (1952)</i>	124
9. Flow-of-Funds Projections <i>Stephen P. Taylor (1963)</i>	140
10. Measuring the Saving-Investment Process <i>John C. Dawson (1964)</i>	149
11. Source and Use Analytics <i>James S. Earley, Robert J. Parsons, and Fred A. Thompson (1976)</i>	156
12. Financial Programming <i>International Monetary Fund Institute (1981)</i>	168

PART IV
FLOW-OF-FUNDS DATA METHODS

Introduction to Part IV	181
13. How to Estimate a Simple Flow-of-Funds System <i>John C. Dawson (1991)</i>	185
14. Estimates from the IMF Accounts: Kenya <i>International Monetary Fund Institute (1981)</i>	196
15. Worksheet Methods <i>Board of Governors of the Federal Reserve System (1993)</i>	210
16. How to Estimate the Business Sources and Uses of Funds Statement: Ghana <i>John C. Dawson (1977)</i>	238
17. Bridging Tables <i>Board of Governors of the Federal Reserve System (1955)</i>	244

18. Data Frontiers: Measuring International Capital Flows
International Monetary Fund (1992) 253

PART V CONCEPTUAL DESIGN OF THE ACCOUNTS

- Introduction to Part V 267
19. The Case for Core Accounts
C.A. van Bochove and H.K. van Tuinen
 with Comment by *Nancy D. Ruggles (1986)* 271
20. A Market Transactions View of U.S. Households
Nancy D. Ruggles and Richard Ruggles (1992) 282
21. Financial Issues for the SNA Revision
Nancy D. Ruggles (1987) 291
22. The Conceptual Relation of Flow-of-Funds Accounts to the SNA
John C. Dawson (1991) 313
23. Financial Accounts in the New SNA 1993
Inter-Secretariat Working Group on National Accounts (1993) 324
24. Harmonization: International Debt Stocks and Flows
Bank for International Settlements et al. (1994) 342

PART VI USES OF THE ACCOUNTS IN EMPIRICAL MODEL ANALYSIS

- Introduction to Part VI 359
25. The Flow-of-Funds Matrix in a Model
John C. Dawson (1958) 367
26. A Bank Reserves Model
Frank de Leeuw (1969) 380
27. Financial Market Clearing with a Full Financial Structure
Barry Bosworth and James S. Duesenberry (1973) 397
28. The Demand-Supply Model and Long-Term Interest Rates
Benjamin M. Friedman (1980) 427

29. Toward General Equilibrium Analysis with Careful Social Accounting
David Backus, William C. Brainard, Gary Smith, and James Tobin (1980) 446

30. International Capital Flows and Exchange Rates
Kanta Marwah and Lawrence R. Klein (1983) 468

PART VII

USES OF THE ACCOUNTS IN HISTORICAL DATA ANALYSIS

- Introduction to Part VII 491

31. How World War II Was Financed
Morris A. Copeland (1962) 495

32. Saving-Investment Process Analysis for the 1950s
John C. Dawson (1964) 504

33. Financial Flows and Interest Rates
Board of Governors of the Federal Reserve System (1971) 520

34. Growth and Change in Intermediation, 1945–79
Benjamin M. Friedman (1980) 535

35. Structure Change in a Policy Model
Benjamin M. Friedman (1989) 554

36. Capital Flows and the 1992 Currency Crisis in Europe
International Monetary Fund (1993) 571

PART VIII

USES OF THE ACCOUNTS IN CURRENT POLICY ANALYSIS

- Introduction to Part VIII 591

37. Monetary and Credit Policy Briefing: The “Greenbook”
Staff of the Board of Governors of the Federal Reserve System (1968) 595

38. Policy Projection with Chart Show Briefing
Staff of the Board of Governors of the Federal Reserve System (1975) 600

39. Financial Market Projection for Private Financial Institutions
Henry Kaufman, James McKeon, and David Foster (1979) 618

40. Financial Diagnosis: Japan <i>Bank of Japan (1992)</i>	643
41. Current Saving-Investment Process Analysis: Indonesia <i>John C. Dawson (1992)</i>	666
42. A Financial Policy Brief: Indonesia <i>John C. Dawson (1994)</i>	682
43. Monetary Policy Report to the U.S. Congress <i>Board of Governors of the Federal Reserve System (1994)</i>	686
44. The Medium-Term Outlook for Kazakhstan's Economy <i>John A. Holsen (1995)</i>	700
Index	723
About the Editor	739

List of Tables and Figures

1. *Social Accounting for Moneyflows*

Table	1.1 Statement of Payments and Balances for Households	10
-------	---	----

2. *Concept of the Flow-of-Funds Accounts*

Table	2.1 Model Flow-of-Funds Matrix	21
	2.2 Model Credit Market Summary	28
	2.3 Private Claims on U.S. Government Institutions	44
	2.4 Notes to Figures in Reading 2	46
Figure	2.1 Diagram of Financial Structure	30
	2.2 Borrowing and Capital Goods Spending—Short-Term	34
	2.3 Borrowing and Capital Goods Spending—Long-Term	34
	2.4 Borrowing, Capital Outlays, and GNP	35
	2.5 Total Nonfinancial Borrowing and Household Plus Business Borrowing	36
	2.6 Debt Levels	36
	2.7 Analysis of Private Debt	37
	2.8 Total Debt and Financial Asset Holdings	38
	2.9 Debt and Financial Assets in the Private Economy	39
	2.10 Private Sector Deposit and Credit Market Assets	40
	2.11 Private Holdings of Financial Assets and the GNP	41
	2.12 Total Private and Household Holdings of Financial Assets	42
	2.13 Household Holdings of Credit Market Assets and Corporate Equity	43

3. *Overview, Organization, and Uses of the Present U.S. Accounts*

Table	3.1 Structure of a Typical Sector Table in the Flow-of- Funds Accounts	53
-------	---	----

	3.2 Detailed Flow-of-Funds Matrix, 1991	54
	3.3 Simplified Flow-of-Funds Matrix, 1991	56
	3.4 Gross Saving and Investment in the Flow-of-Funds Accounts and the National Income and Product Accounts, 1991	59
	3.5 Allocation of NIPA Saving and Investment Among Sectors Included in the Flow-of-Funds Accounts, 1991	61
	3.6 Credit Market Funds, by Type of Supplier, 1960-92	75
Figure	3.1 Sector Groupings in the Flow-of-Funds Accounts	64
	3.2 Financial Transaction Categories in the Flow-of-Funds Accounts	65
	3.3 Domestic Nonfinancial Debt as a Percentage of GDP, 1952-92	67
	3.4 Growth of Domestic Nonfinancial Debt and Depository Credit, 1952-92	67
	3.5 Federal Debt and Deficit, 1972-92	69
	3.6 Net Issuance of Tax-Exempt Debt by All Borrowers, 1972-92	70
	3.7 Credit Market Borrowing and Financing Gap, Nonfinancial Corporations, 1972-92	70
	3.8 Net Issuance of Corporate Equities, 1972-92	71
	3.9 Short-Term Debt as a Percentage of Credit Market Debt, and Bond Yields, Nonfinancial Corporations, 1972-92	72
	3.10 Debt of the Household Sector as a Percentage of Disposable Income, 1960-92	72
	3.11 Home Mortgage Debt as a Percentage of the Value of Owner-Occupied Real Estate, 1946-92	74
	3.12 Equity in Owner-Occupied Homes, 1972-92	74

7. A Framework for Financial Analysis

Figure	7.1 A Generalized Income Statement for a Single Sector	116
	7.2 A Generalized Balance Sheet for a Single Sector	116
	7.3 A Partial Sector Sources and Uses of Funds Statement, on Capital Account	117
	7.4 A Partial Sector Sources and Uses of Funds Statement, on Capital Account	119
	7.5 A Complete Sector Sources and Uses of Funds Statement	120
	7.6 Flow-of-Funds Matrix for the Whole Economy	122

8. Moneyflows and Business Fluctuations

Figure 8.1	GNP Expenditures and Other Moneyflows	134
8.2	GNP Expenditures and Other Moneyflows	135
8.3	GNP Expenditures and Other Moneyflows	136
8.4	GNP Expenditures and Other Moneyflows	137

10. Measuring the Saving-Investment Process

Figure 10.1	Saving-Investment Process	150
10.2	Condensed Flow-of-Funds Matrix	153

11. Source and Use Analytics

Figure 11.1	Changing Expenditure Without Credit	161
11.2	Direct NF Credit and Changing Expenditure	163
11.3	Financial Intermediation and Rising Expenditure	166

13. How to Estimate a Simple Flow-of-Funds System

Table 13.1	Financial Flow Matrix I	187
13.2	Financial Flow Matrix II	194

14. Estimates from the IMF Accounts: Kenya

Table 14.1	Kenya: Selected National Accounts Data, 1975–76	199
14.2	Kenya: Summary of Central Government Budgetary Operations, Fiscal Years 1976 and 1977	200
14.3	Kenya: Expenditure and Lending Minus Repayments by Economic Type for Budgetary Central Government, Fiscal Years 1976 and 1977	201
14.4	Kenya: Monetary Survey, December 1974–June 1977	202
14.5	Kenya: Summary Accounts of the Monetary Authorities, December 1974–June 1977	203
14.6	Kenya: Summary Accounts of the Commercial Banks, December 1974–June 1977	204
14.7	Kenya: Balance of Payments Summary, 1976	205
14.8	Kenya: Income-Expenditure and Financial Transactions, 1976	206
14.9	Kenya: Summary of Income and Flow-of-Funds Accounts, 1976	208

15. Worksheet Methods

Table 15.1	F.100 Households, Personal Trusts, and Nonprofit Organizations	219
------------	--	-----

	15.2	F.204 Checkable Deposits and Currency	228
Figure	15.1	Consumer Installment Borrowing, 1976-92	213
 16. <i>How to Estimate the Business Sources and Uses of Funds</i> <i>Statement: Ghana</i>			
Table	16.1	22 Ghana State Enterprises—Combined Balance Sheet, 1971-75	241
	16.2	22 Ghana State Enterprises—Derivation of Operating Surplus, 1972-75	242
	16.3	22 Ghana State Enterprises Sources and Uses of Funds Statement, 1972-75	243
 17. <i>Bridging Tables</i>			
Table	17.1	Consumer Nonfinancial Receipts and Personal Income	245
	17.2	Consumer Financial Asset Flows and Individuals' Liquid Saving	246
	17.3	Federal Nonfinancial Outlays and Federal Cash Outgo	247
	17.4	Federal Obligations, the Public Debt, and Net Cash Borrowing	248
	17.5	Federal Government Purchases of Other Goods and Services	249
	17.6	Rest of the World Purchases from the United States	250
	17.7	Private Capital Expenditures, by Type and Sector, 1950	251
	17.8	Private Capital Formation	252
 18. <i>Data Frontiers: Measuring International Capital Flows</i>			
Table	18.1	Global Capital Account Discrepancies, 1983-89	254
	18.2	Global Capital Account Discrepancies and Adjustments by Major Components, 1986-89	255
	18.3	Adjustments to "Other Capital" Indicated by International Banking Statistics, 1986-89	258
	18.4	Global Balance of Payments Accounts as Reported and Adjusted, 1986-89	260
	18.5	Countries Ranked by Reported 1986-89 Capital Flows	262
 20. <i>A Market Transactions View of U.S. Households</i>			
Table	20.1	Derivation of Household Income, Outlays, Gross Saving, and Gross Capital Formation, 1989	287

20.2	Household Saving, Capital Formation, and Net Lending, 1947–89	289
<i>22. The Conceptual Relation of Flow-of-Funds Accounts to the SNA</i>		
Table 22.1	Major Types of National Accounts Data Reported in U.N. Compilation for 1983	319
Figure 22.1	Nonfinancial Enterprises, Corporate and Quasi-Corporate; Account 5, Capital Finance Account	317
<i>23. Financial Accounts in the New SNA 1993</i>		
Table 23.1	Integrated Economic Accounts	328
	23.2 Account III.2: Financial Account	335
	23.3 Classification of Transactions in Financial Assets and Liabilities	336
<i>25. The Flow-of-Funds Matrix in a Model</i>		
Figure 25.1	Variables and Equations	369
	25.2 Derivation of Illustrative Behavior Equations	378
<i>26. A Bank Reserves Model</i>		
Table 26.1	Prediction Errors, 1963–64	392
Figure 26.1	Final Condensed Financial Sector Equations	384
	26.2 Calculated and Actual Values of Financial Sector Variables	391
	26.3 Effects of a \$500 Million Increase in Unborrowed Reserves	394
<i>27. Financial Market Clearing with a Full Financial Structure</i>		
Table 27.1	Sources and Uses of Funds by Sector	401
<i>28. The Demand-Supply Model and Long-Term Interest Rates</i>		
Table 28.1	Comparison of Simulated Fiscal Policy Effects	438
Figure 28.1	Comparison of Simulated Fiscal Policy Effects	441
<i>29. Toward General Equilibrium Analysis with Careful Social Accounting</i>		
Table 29.1	Empirical Model, Uses—Sources of Funds; 1977 Flows at Annual Rates	451
	29.2 Open Market Operation: \$1 Billion Purchase of Short-Term Securities	462

29.3	Reserve Requirements: Increase of 0.01 in Required Reserve Ratio on Demand Deposits	462
29.4	Operation Twist: \$1 Billion Purchase of Longs, Sale of Shorts	463
29.5	Freddie Mac: \$1 Billion Purchase of Mortgages, Sale of Longs	463
29.6	Stock Market Intervention: \$1 Billion Purchase of Equity, Sale of Shorts	464
29.7	Regulation Q Ceilings on Deposit Rates: 25 Basis Point Increase at Both Commercial Banks and Savings Institutions	465
 30. <i>International Capital Flows and Exchange Rates</i>		
Table 30.1	Actual and Estimated Values of <i>€iSP</i> Exchange Rates, National Currency Units per SDR	483
 31. <i>How World War II Was Financed</i>		
Table 31.1	How World War II Was Financed—A Summary Statement Based on the National Income and Product Account, 1939 and 1940–45	497
31.2	Federal Government Sources and Uses of Funds, 1939–46	498
31.3	Other Sectors, Sources and Uses of Funds, Six-Year Totals, 1940–45	499
 32. <i>Saving-Investment Process Analysis for the 1950s</i>		
Figure 32.1	The Financing of Real Investment	506
32.2	Banking Sector	508
32.3	Nonbank Financial Institutions	510
32.4	Analysis of Federal Finance	514
32.5	The Placement of Saving	516
 33. <i>Financial Flows and Interest Rates</i>		
Table 33.1	Selected Interest Rates	521
33.2	Summary Data for Seven Periods of Interest Rate Changes, End 1963 to Early 1971	522
33.3	Net Borrowing in Short- and Long-Term Markets	524
33.4	Borrowing in Major Credit Markets	526
33.5	Sectors Supplying Funds in Major Credit Markets	527

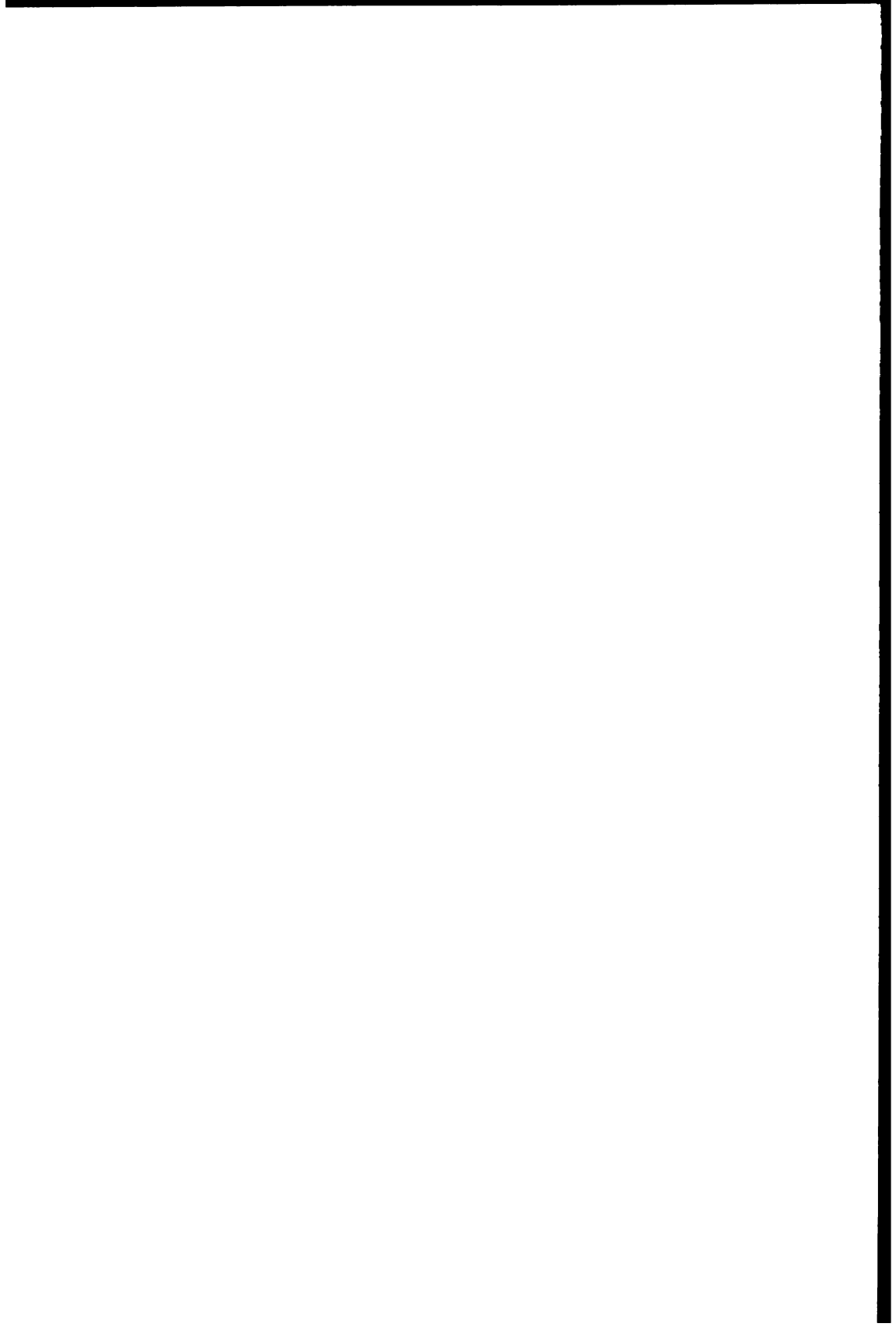
	33.6	Changes in the Income Velocity of Money and Short-Term Interest Rate Movements	530
Figure 33.1		SUBPERIODS Showing Different Patterns of Yield Movement	522
	33.2	Rates on SAVINGS ACCOUNTS Respond Very Slowly to Market Rates	529
	33.3	Broad Conformity of Movement Appears Despite Diversities in SHORT-TERM RATES	532
	33.4	LONG-TERM RATES Exhibit a Common Trend	532
	33.5	SPREADS Between Long- and Short-Term Rates ALTER OVER TIME	533
	33.6	LOWER-GRADE BONDS Still Demand Sizable Yield Premiums	534
 34. <i>Growth and Change in Intermediation, 1945–79</i>			
Table	34.1	Net Acquisitions of Financial Assets by United States Households	539
	34.2	Asset Returns and Price Inflation	540
	34.3	United States Credit Market Funds Advanced to Nonfinancial Sectors	542
	34.4	Assets and Liabilities of United States Commercial Banks	544
	34.5	Assets and Liabilities of United States Nonbank Deposit Institutions	548
	34.6	Assets of United States Life Insurance Companies and Pension Funds	550
Figure	34.1	Financial Asset Holdings of United States Households	537
	34.2	Holdings of Claims Against United States Nonfinancial Sectors (Including Equities)	541
	34.3	Income Velocities of Monetary and Credit Aggregates	545
 35. <i>Structure Change in a Policy Model</i>			
Figure	35.1	Residential Investment: Responses to 100 Basis Point Rise in Mortgage Rate and Imposition of Credit Rationing	565
	35.2	Investment in Producers' Equipment: Response to 100 Basis Point Increase in Corporate Bond and Commercial Paper Rates	567

35.3	Personal Consumption Expenditures: Response to 100 Basis Point Rise in Commercial Paper Rate	568
36. Capital Flows and the 1992 Currency Crisis in Europe		
Table 36.1	Distribution of Assets Managed by Leading Fund Managers in Europe and the United States, December 31, 1991	574
36.2	Foreign Investments of Pension and Open-End Mutual Funds for Selected Industrial Countries, 1991	575
36.3	Regulatory Constraints on Foreign-Currency-Denominated Investments by Major Financial Institutions in Selected Industrial Countries	579
36.4	External Net Capital Flows for Selected Countries in the EMS	581
Figure 36.1	Interest Rate Differentials on Eurocurrency Deposits	583
38. Policy Projection with Chart Show Briefing		
Table 38.1	Funds Raised in Credit Markets	615
38.2	Funds Advanced in Credit Markets	616
38.3	Banking and Monetary Variables	617
Figure 38.1	Principal Assumptions	601
38.2	[No Caption]	602
38.3	Real GNP Growth in Postwar Recoveries	603
38.4	[No Caption]	604
38.5	[No Caption]	605
38.6	[No Caption]	606
38.7	[No Caption]	607
38.8	[No Caption]	607
38.9	Nonfinancial Corporations: Capital Expenditures, Internal Funds	608
38.10	Nonfinancial Corporations: Total Funds Raised	608
38.11	Electric Utilities	609
38.12	Household Total Financial Assets	610
38.13	[No Caption]	611
38.14	Savings and Loans	612
38.15	Policy Alternatives	613
38.16	[No Caption]	614
39. Financial Market Projection for Private Financial Institutions		
Table 39.1	1. Summary of Supply and Demand for Credit	635
39.2	2. Real Estate Mortgages and Factors in the Housing Market	636

	39.3	3. Domestic Corporate and Foreign Bonds Sold in United States	637
	39.4	5. U.S. Treasury Debt	638
	39.5	6. Federal Agency Debt	639
	39.6	8. Loans	640
	39.7	9. Summary for Nonbank Finance	641
	39.8	10. Commercial Banks	642
Figure	39.1	Markets and Economy: Percent Growth Rates in Nominal GNP vs. Credit Outstanding	619
	39.2	Emergence of Real Positive Interest Rates in Crucial Markets	620
	39.3	Corporate Financing Needs	623
	39.4	Short vs. Long Term Corporate Financing	624
	39.5	New Corporate Bond Issues, by Type	625
	39.6	Residential Mortgage Formation	627
	39.7	Development of Secondary Market for Home Mortgages	627
	39.8	Governmental Demands as a Proportion of Total Credit Demands	628
	39.9	Savings Inflows Compared to Mortgage Lending at Savings and Loan Associations	631
	39.10	Money Market Liabilities as a Proportion of Total Commercial Bank Liabilities	632
40. Financial Diagnosis: Japan			
Table	40.1	Financial Surplus/Deficit by Sector	652
	40.2	Fund Raising and Investment by the Domestic Nonfinancial Sector	654
	40.3	Flow-of-Funds from/to the Overseas Sector	655
	40.4	Fund Intermediation in the Broadly Defined Financial Market	657
Figure	40.1	Financial Surplus/Deficit by Sector	653
	40.2	Broadly Defined Financial Market	656
	40.3	Fund Raising in the Corporate Business Sector	658
	40.4	Changes in the Fund Raising and Investment Activity of the Corporate Business Sector	659
	40.5	Changes in the Fund Raising and Investment Activity of the Personal Sector	660
	40.6	CP Issue Rate, Interest Rate on Large-Denomination Time Deposits and Short-Term Prime Lending Rate	661

	40.7	Lending by Sector	662
	40.8	Consumer Credit	663
	40.9	Financial Assets Outstanding at End of Period	664
	40.10	Money Stock	665
 41. Current Saving-Investment Process Analysis: Indonesia			
Figure	41.1	Fixed Capital Formation and Savings	667
	41.2	Sector Saving, Fixed Capital Formation, and Net Lending	668
	41.3	Financial Flow Matrix	670
	41.4	Other Domestic Sectors Finance of Investment	675
	41.5	Monetary Authorities—Major Factors Affecting Reserves	679
 43. Monetary Policy Report to the U.S. Congress			
Table	43.1	Ranges for Growth of Monetary and Debt Aggregates	688
	43.2	Assets of Domestic Banks, by Capital Category, Adjusted for Overall Supervisory Ratings, as a Proportion of All Such Assets	696
	43.3	Growth of Money and Debt	699
Figure	43.1	Debt: Annual Monitoring Range and Actual Growth	689
	43.2	Nonfinancial Corporate Financing Gap as a Percent of Total GDP	690
	43.3	Indicators of Nonfarm Nonfinancial Corporate Sector Finances—Debt to Sector GDP, Debt Service to Sector GDP	691
	43.4	Indicators of Household Sector Finances—Debt to Disposable Income, Debt Service to Disposable Income	692
	43.5	Household Deposits as a Percent of Household Assets	693
	43.6	Net Percentage of Domestic Loan Officers Reporting Tightening Standards for Commercial and Industrial Loans	694
	43.7	Growth of Domestic Nonfinancial Debt and Depository Credit	695
	43.8	M3: Annual Range and Actual Growth	696
	43.9	M2: Annual Range and Actual Growth	697
	43.10	Growth Rates of M2 and M2 Plus Stock and Bond Funds	697

	43.11 M1: Actual Growth	698
	43.12 Average Maturity of Treasury Debt	698
44. <i>The Medium-Term Outlook for Kazakhstan's Economy</i>		
Table	44.1 Monetary Sector Account	703
	44.2 Consolidated Government Budget	705
	44.3 Balance of Payments	709
	44.4 The Origin and Use of Real Resources	711
	44.5 Sources and Uses of Funds for the "Rest of the Economy"	713
	44.6 Sources and Uses of Funds Matrix for Kazakhstan, 1994	718
	44.7 Traditional Presentation of Five Basic Accounts for Kazakhstan	720



Foreword

What happens in the financial markets plausibly can, and frequently does, exert a major influence on nonfinancial economic activity. This influence arises in the first instance from the need to transfer spending power from those who save, in the sense of foregoing current consumption, to those who invest, in the sense of accumulating the economy's productive capital. Even the simplest direct transfers of resources from ultimate savers to ultimate investors would constitute a form of financial flow, but in fact these transfers are normally intermediated, often by specialized financial institutions designed for this purpose and typically with multiple steps along the way. And at each step, financial market structure and practice play a role in determining which transfers take place and on what terms. Moreover, in most modern economies the accumulation over time of these same transfers accounts for the bulk of the wealth owned, and substantially all of the debts owed, by families, businesses, and governments. On both counts, the complex flow of resources through an economy's financial system therefore not only mirrors its production and income, its saving and investment, but importantly affects both the level and the composition of its nonfinancial activity.

For just this reason, economists have long sought to gain a better understanding of how financial markets work, and in particular how they interact with real economic activity. There is an especially long and rich tradition of empirical economic research on financial markets, motivated in part by the ample availability of reliable data on interest rates, stock prices, gross securities volumes, bank loan and deposit growth, and so on. But in many cases these data are better suited to research on financial phenomena *per se* than to exploring the connections between the economy's financial and real dimensions. (It is only fair to admit, of course, that many economists have also studied financial behavior as an aspect of economic behavior that is interesting in its own right.) Specifically, such data mostly fail to capture what is essential in the resource flows that finance investment in new factories and new houses and new cars, or that provide working capital to business, or that fund the government's deficit, or that facilitate nonfinancial economic activity in myriad other ordinary ways. Nor do they typically encompass the accumulation of these flows over time into stocks of assets owned and liabilities owed.

The flow-of-funds accounts, and the structured analysis of financial-nonfinancial interrelationships that they have made possible, are an attempt to fill this important vacuum. The concepts and data initially pioneered by Morris Copeland, and more fully developed in later years by Stephen Taylor, focus squarely on resource transfers from savers to investors, on the role of intermediary institutions in providing the links in this connecting chain, and on the consequent accumulation of asset and liability stocks. They do so in a coherent way that enforces *ex post* relationships between supply and demand, dynamic relationships between flows and stocks, and balance sheet relationships defining net worth as assets minus liabilities—all essentials in the context of a science in which the primitive for representing behavior is constrained maximization. (As numerous examples over the years have shown, it is pointless to model constrained maximizing behavior, either for individual decision-making units or for the economy in the aggregate, without bothering to get the constraints right.) Most important, the creators of the flow-of-funds accounts deliberately and self-consciously designed these concepts and measurements to achieve the greatest possible integration with already familiar concepts and data describing nonfinancial economic activity.

The flow-of-funds accounts therefore make possible the empirical investigation of a broad range of questions, of both theoretical and practical interest, about what takes place in the financial system and how it bears on the nonfinancial economy. With flow-of-funds data it is possible to address in an empirically richer way such traditional questions as how the effects of the central bank's monetary policy actions spread through the commercial banking system and other elements of the money-and-credit creation system to alter the behavior of businesses and consumers, or how the financing of a larger or smaller government deficit either diminishes or reinforces the effects of changes in tax and spending policies. Flow-of-funds data also make possible the empirical analysis of more specific questions that would otherwise be difficult to address at all, like (in a U.S. context) how the introduction of a secondary mortgage market has affected the overall volume and cyclical fluctuation of construction activity, how the direction of an ever increasing fraction of individuals' saving through institutionalized pension funds affects the allocation of the economy's investment, or what implications for business and consumers might follow from commercial banks' continuing loss of market share to nonbank lending institutions. Because the influence of the financial markets on nonfinancial activity is not merely a question of the terms on which financial flows take place but whether the relevant market structure enables certain flows to take place at all, flow-of-funds analysis is also well suited for addressing such structural questions in the context of developing economies, where the issue at hand is often which markets or institutions that do not already exist could usefully be established. Given the impetus that motivated the initial creation and subsequent develop-

ment of the flow-of-funds accounts, it is no accident that many of the questions on which flow-of-funds analysis most naturally bears are directly relevant to issues of public policy.

John Dawson's collection brings together the seminal writings explaining the creation of the flow-of-funds accounts, including key papers by both Copeland and Taylor, and some of the most significant contributions in which economists have exploited these concepts and data to investigate either financial behavior or financial-nonfinancial interactions or both. Professor Dawson has selected well from this voluminous and extraordinarily varied literature. The papers he has included will give the reader not only a good grounding in the fundamentals of this line of economic analysis but also some flavor of the practical, useful ways in which researchers have built on them. Professor Dawson's thoughtful and carefully organized introductions to these papers are also well worth reading. I am pleased to add this foreword as an expression of support and respect for his undertaking.

I am especially pleased to do so because Professor Dawson has dedicated this volume to Steve Taylor. It is probably in the nature of how top-notch statistical organizations like the Federal Reserve System work that they attract and develop talented professionals who devote as much of their energies to facilitating the work of others as to carrying out their personal intellectual agenda. This, of course, requires a certain generosity of spirit, not to mention the ready capacity to enter sufficiently into someone else's conceptual framework to be able to provide genuinely useful support. Steve Taylor had the capacity, and, more so than anyone else I know, he embodied—indeed, he exemplified—the generosity.

I was fortunate to experience this generosity at first hand. Most of what I know about flow-of-funds concepts I learned from Steve. All of what I know about flow-of-funds data I learned from him. The process by which he taught and I learned was mostly one-on-one instruction, usually in Steve's office, often for hours at a session, and frequently at odd hours of the night. (The closest parallel that comes to mind is what it used to be like, alas mostly in former times, to study Talmud with a master.) Nor was I the only person whom Steve taught and whose work he made possible. Most of the researchers whose work on flow-of-funds analysis Professor Dawson has assembled here likewise learned from him, and counted on his knowledge and his help.

Steve Taylor brought a strong sense of purpose to his work on flow-of-funds analysis, and it enabled him to accomplish, over his professional lifetime, a task that required extraordinary intellectual persistence and endurance. He brought the same sense of purpose to his interactions with public policy, and it made him remember (and often usefully remind the rest of us) that economics encompasses more than just technical issues and also concerns what is right, and desirable, and admirable, and what is not. His straightforward working principle was that life is not a moral neuter: that there is right and there is wrong, and that thinking human

beings have a positive obligation to decide which is which and go forward accordingly. That was Steve's view of economic policy, of politics, of literature, and of personal relationships and responsibilities. He embodied an attitude toward life that I admired more than I know how to say. He was one of the best friends I have ever had.

Benjamin M. Friedman
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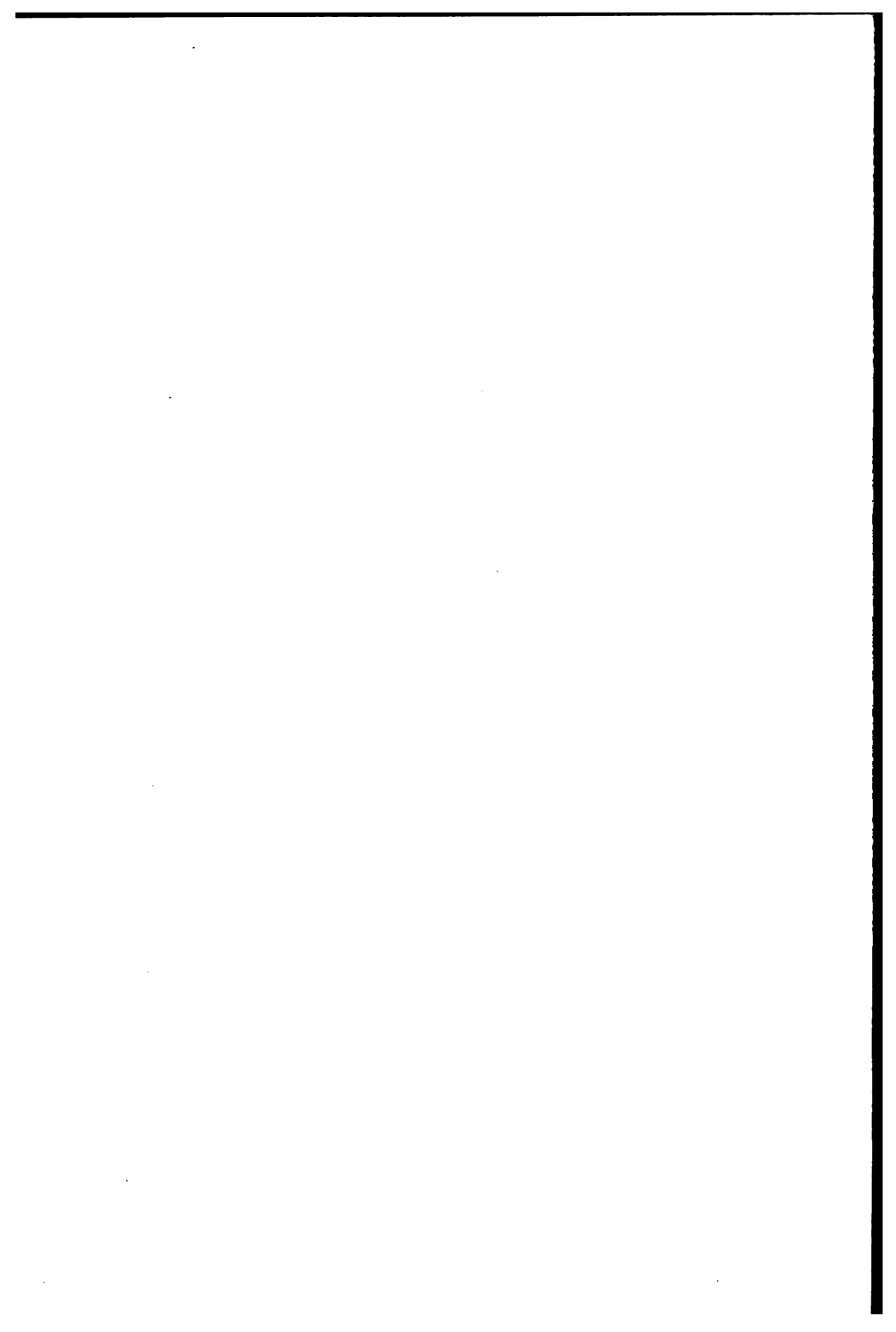
Preface

Flow-of-funds analysis is an undefined and partially hidden field of study. So a representative collection of readings is hardly possible. Certainly this collection is idiosyncratic; it reflects in many ways my own experience as a flow-of-funds analyst. Nevertheless, the examples in the book can perhaps play a role in defining flow-of-funds as a field of study.

I have spent most of my professional life—other than teaching—doing flow-of-funds analysis. This life started in the late 1940s, when I became a student of Morris Copeland. My association with the Flow-of-Funds Section of the Federal Reserve began with my thesis research and has kept up over the years. In recent decades I have worked mainly on Third World economies in Africa and Asia, assembling flow-of-funds accounts and using them in financial analyses. Most of my economist colleagues in these years have been nonacademic practitioners.

Much of Copeland's philosophy rubbed off on me—as will become evident to readers. Apart from Copeland, the strongest intellectual influence on me was Steve Taylor, the longtime Chief of Flow-of-Funds at the Federal Reserve. He was a marvelous blend of data person, policy analyst, and wide-ranging theorist. And he was a superb critic to me. Often after a mission abroad I would return to "home ground" to counsel over a meal with Steve. I and this book owe him more than I am able to express.

The book will reveal me as an institutionalist, practical in orientation, and skeptical of economic doctrine. I hope that my tastes in selecting readings will promote a further understanding of flow-of-funds analysis. The book should demonstrate that flow-of-funds is an ongoing, practical field of analysis and should give a new sense of its dimensions.



Acknowledgments

For help with the book I would like to acknowledge and offer special thanks:

To Richard Bartel of M.E. Sharpe for sparking my interest in assembling a book of readings.

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To Vito Natrella for initiating the Copeland Memorial Session at the American Statistical Association meetings of 1991, the origin of the readings in Part II.

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To the numerous economist-practitioners in Africa and Asia who both taught me and listened to me about flow-of-funds analysis.

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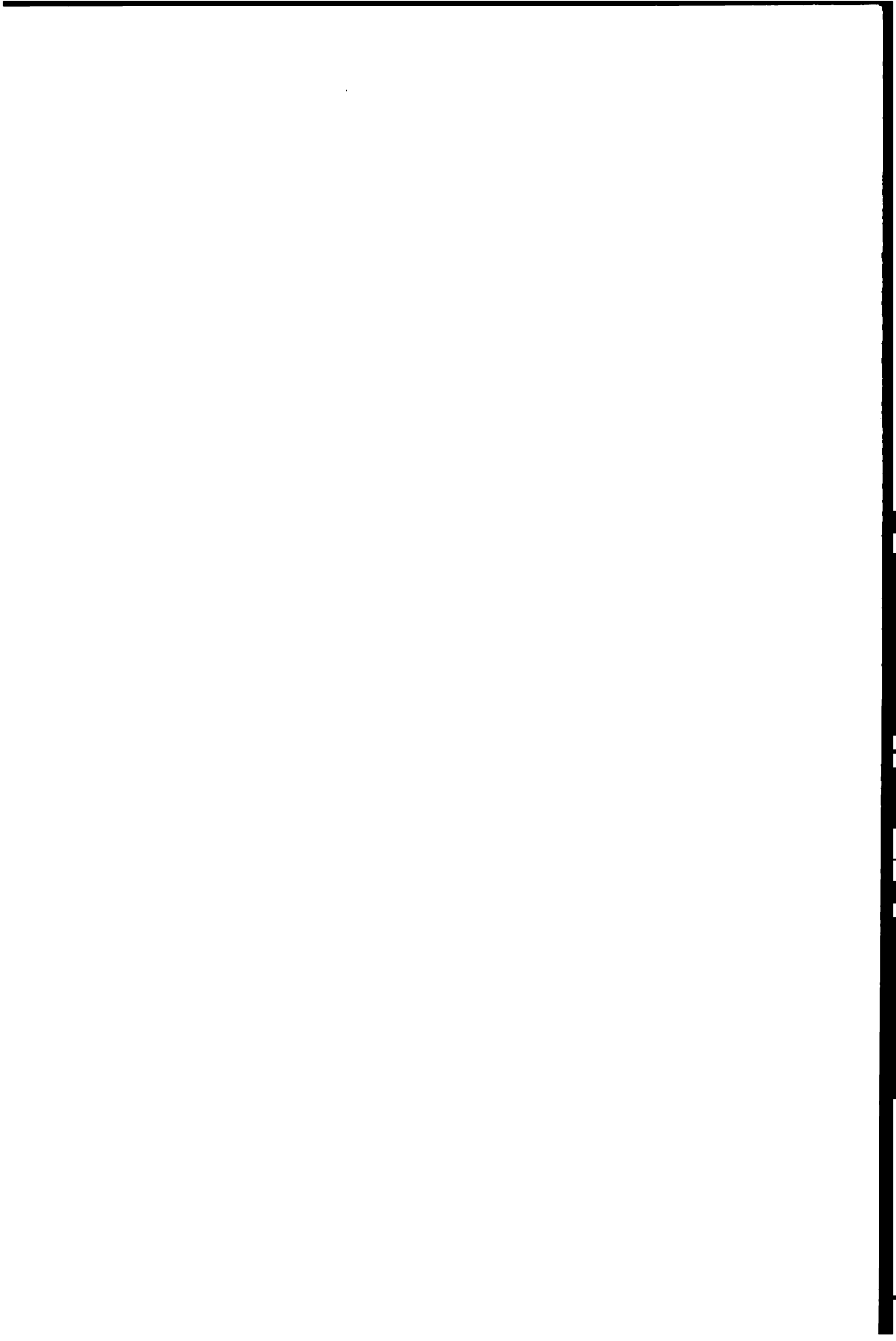
To Jan van Tongeren of the U.N. Statistical Division, for interest in my work and helpful suggestions.

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I owe a debt of thanks to Terri Phipps for her very able and untiring help with preparation of the manuscript.

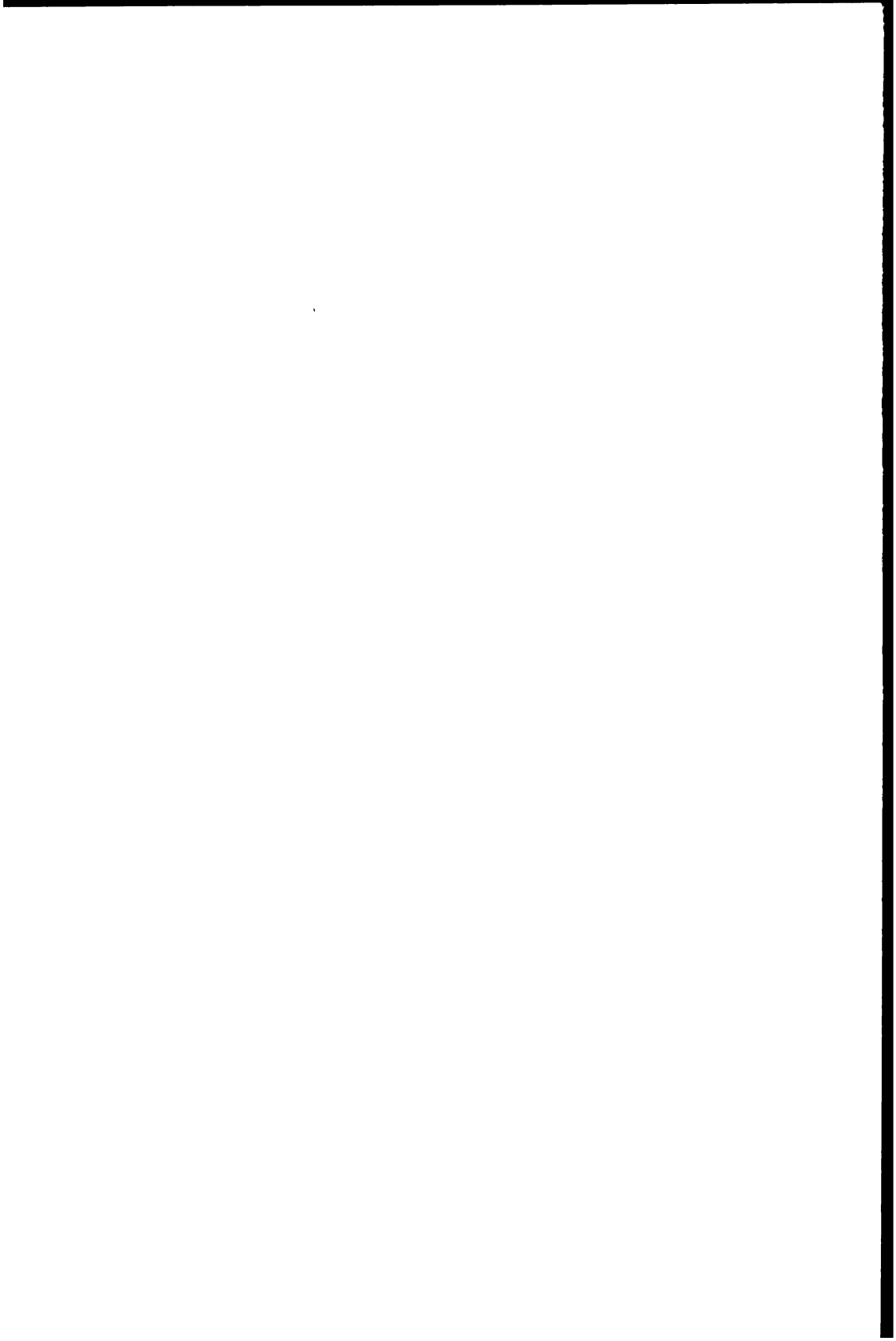
Finally, I would like to acknowledge financial support from Grinnell College for help with manuscript preparation.



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And the numerous practitioners whose authorship is by custom hidden behind organizational names in this book.



Part I

Presenting the Flow-of-Funds Accounts



Introduction to Part I

Flow-of-funds analysis began some fifty years ago as a branch of social accounting, which at that time was a major subfield of economic statistics. Social accounting referred to the preparation and interpretation of overall economic statistics in the form of financial statements—that is, in the form of balancing accounts for the economy as a whole that were analogous to the statements prepared for individual businesses. A major early achievement of social accounting was the design of the national income and product accounts, which up to the present day take the form of an articulating set of social accounts. The flow-of-funds accounts—or as their originator referred to them, the moneyflows accounts—differ from the national income and product accounts in that instead of focusing on production and income generation, the flow-of-funds accounts focus on the operation of the financial system, on the flows of borrowing and lending and on the activities of banks and other financial institutions.

The purpose of this handbook is to acquaint economists with contemporary flow-of-funds analysis. The book is designed for macroeconomic *practitioners*—economists whose work lies close to the economic facts and policies of the real world. For practitioners the learning of flow-of-funds analysis means (1) learning about the system of accounts, (2) learning how such data are assembled, and (3) learning how to interpret and analyze such data—primarily in the elementary sense of “making the numbers talk.” To help with the first objective, the book offers Parts I–III, which describe the accounts, which trace the development of the present-day accounts from their origins, and which explicate the system and its uses. The second task, assembly of flow-of-funds data, is supported by Parts IV–V, containing data methods and conceptual approaches to account design. Finally, there are Parts VI–VIII, which present a variety of substantive analyses making use of the flow-of-funds system, grouped into empirical model analyses, historical data analyses, and current policy analyses.

Since its launching, the flow-of-funds field has undergone major changes both in the design of the accounts and in the types of analysis for which they have been used. A secondary purpose of this handbook is to visit some of the high points of this journey. As a guide to this aspect of the readings, the following brief sketch may be of use.

Following Copeland's first complete presentation of the accounts in 1952, they went through a decade of what can be called "data consolidation" at the hands of the data producers at the Federal Reserve Board. This involved bringing the accounts onto a current reporting basis, moving from annual to quarterly figures, and seasonally adjusting the system. In addition, the nonfinancial parts of the accounts were truncated, and the whole system was moved toward integration with the national income and product accounts, using the saving-investment account as the connecting link. These developments, described by Taylor in reading 6 and completed in about 1965, crystallized the measurements into the form of the accounts that we continue to use.

Paralleling these data improvements were the beginnings of uses of the system. On one hand, it provided the material for regular current analyses of the financial system. But more sophisticated uses in financial projections also began, both within private financial institutions and within the Federal Reserve. These projections were significant in a number of ways. They used the flow-of-funds accounts as a system, making use of the embedded social accounting constraints. Secondly, they firmed up an analytical approach toward the financial system referred to as the saving-investment process. Finally, the projection method forced analytical attention onto the current financial facts and toward identifying causal relationships among financial flow variables. Despite its effectiveness, policy projection work of this type seems to have tapered off in the 1980s.

Another major episode, which began in the 1960s, involved the meeting of flow-of-funds with econometric model building, especially the large macroeconomic models that were the outgrowth of the empirical model building sparked by Keynes. These model builders felt they could strengthen the financial blocks of their models using the financial market detail in the new accounts. Also, the data then becoming available on financial asset and liability levels fitted their theoretical approach. In this period increasing attention was paid to social accounting features in these models. (The development is traced by the readings in Part VI.) As in the projection work, much of the energy seemed to have drained from this effort by the 1980s.

The financial system itself can be thought of as coming to the aid of flow-of-funds analysis in the 1980s and 1990s. In the United States, the debt explosion and the collapse of the saving and loan industry forced the attention of analysts on the financial system. A somewhat neglected aspect of financial analysis—the relation of flows in the goods and services markets to the buildup of debt *levels*—came to the forefront. It was the flow-of-funds accounts (and their associated level data) that largely provided the basis for this sort of ratio analysis. Finally, since the 1970s the international financial scene has undergone dramatic institutional change. The larger and more volatile international capital flows are a challenging new area for flow-of-funds analysis.

So much for my brief flow-of-funds history of thought. Now a final note about the content of the selections. The presentation of the accounts and the

various pieces involving analytical uses all deal with financial facts, either for the United States or for other countries. While this book makes no attempt to offer systematic financial history, nevertheless I hope that readers will, in the course of learning about flow-of-funds analysis, find out a good deal about the operation of real world financial systems. Flow-of-funds analysis does offer economists a systematic way of understanding facts that their financial theories need to explain.

It is probable that many economists—especially those of recent vintage—will hardly have heard of flow-of-funds analysis and will hardly understand social accounting to be a discipline within economics. In a way this is hardly surprising; social accounting and even economic statistics are no longer in the field classification of the American Economic Association. Until 1974, however, economic statistics was a major subfield, with social accounting as one of its four divisions. Why has social accounting and even the study of economic data of any kind apparently disappeared from economics? I believe it is important for economists to try to understand this unfortunate development.

Academic economics—the economics of academic institutions and academic journals—has in recent decades come to focus increasingly on economic theory as its important work, especially theory that connects itself to traditional or current economic doctrine. This increasingly mathematical model analysis now carries the prestige in academic economics. As Copeland once pointed out, economics behaves as if the way toward improved economic understanding is to combine more and more theory with less and less fact.

If it is thought necessary to offer empirical support for the theory, the support will probably take the form of econometric results rather than a more mundane factual presentation. It is the study of econometric *method* which has increasingly replaced the substantive study of economic statistics. Unfortunately, whether heavy mathematical processing of economic data yields results that are still in contact with the real world is a moot question. But in any event, neither the theoretical model construction nor the econometric work requires any serious knowledge of the facts that presumably are being explained. These trends have brought about a serious decline in the attention that academic economists pay to fields which develop and analyze economic data such as social accounting.

In addition, the acceptance of social accounting—and especially flow-of-funds accounting—by academic economists has been an uphill battle because its implications run counter to a number of doctrines deeply embedded in the minds of economists. Copeland himself was at pains to show the incompatibility of the quantity theory of money with flow-of-funds accounting. More broadly, many economists still believe that causal analysis in macroeconomics must be based on *ex ante* imbalances in social accounts, a belief that traces back to pre-Keynesian days, when investment and saving did not have to be equal. And from econometrics we have the view that social accounting equations are “mere definitional”

equations not reflecting real world market adjustments. Doctrines such as these are not easy to dislodge.

Whether or not these are the forces at work, it seems clear that social accounting has been discarded as a field by academic economics during the past fifty years.

Now, academic economists are likely to see academic economics as the whole of economics. But it is not. There is another realm. This second realm is occupied by untold numbers of applied economists, economic statisticians, and policy analysts in the ranks of businesses, governments, and international organizations. Let me call this second realm of economics the practitioner's realm. In this realm social accounting is not abandoned.

Practitioners are not so concerned with new economic knowledge; their focus is on real-world policy. Their need is not for sophisticated economic models of doubtful fit. Their need is for techniques of current analysis, for ways to understand what is currently going on in fact in their special areas to help them judge how policy change could improve performance. Here social accounting has a home. In finance, for example, tracing the patterns of who is financing whom, of how saving finances investment, of shifting causation in financial markets—these would be most helpful to practitioners. And these are among the fruits of flow-of-funds analysis.

So let us turn now to three readings which introduce the flow-of-funds accounts. The first is by Morris Copeland, the inventor of the "moneyflows" accounts. It seems only fair to let him speak for himself—to presume he knew what he was doing. In this 1949 piece he is introducing the new system to the accounting profession. The second reading introduces the later form of the accounts, now titled the flow-of-funds accounts. It was written by Stephen Taylor, the longtime Chief of the Flow-of-Funds Section at the Federal Reserve. It shows the state of the accounts in about 1975. The third reading is the up-to-date presentation by the Federal Reserve Board staff. All three of the pieces not only present the accounts but also use the system in brief data analyses.

MORRIS A. COPELAND

Social Accounting for Moneyflows

(1949)

Our economy has suffered in the past from business depressions and unemployment, and in spite of the present high level of business activity, there is no reason to think depressions have been eliminated. If we look beyond the immediate situation, unemployment is still our most important economic problem. Because we live in a money economy where moneyflows play an important role in organizing economic activity, a better understanding of moneyflows should help us toward a better understanding of the problem of maintaining reasonably full employment.

The study in which I have been engaged aims to provide measures of moneyflows that will answer questions such as these: When total purchases of our national product increase, where does the money come from to finance them? When purchases of our national product decline, what becomes of the money that is not spent? Is it hoarded, or what? Who has and exercises discretion to increase or decrease expenditures on national product? What part do cash balances, other liquid asset holdings, and debts play in the cyclical expansion and contraction of moneyflow?

Moneyflows arise out of transactions. Because they arise out of transactions, they are recorded in accounts to the extent that the transactors involved keep books. Because they arise out of transactions, too, overall estimates of the moneyflows in our economy lend themselves to presentation in financial statement form. Such a form of presentation has the great advantage of organizing the component moneyflow estimates into a systematic picture, a picture that brings out a number of equalities between debit totals and credit totals. These equalities facilitate the process of making statistical estimates of moneyflows. They are also very useful in making economic interpretations of moneyflow figures.

Reprinted, with permission, from Morris A. Copeland, "Social Accounting for Moneyflows," *The Accounting Review* 24 (July 1949): 254-64.

The preparation and interpretation of overall economic statistics in financial statement form is a procedure that has come to be known as social accounting. Social accounting, as a procedure of economic research, has already yielded highly valuable returns. But in my opinion it is only in its infancy. The real growth of social accounting lies ahead. I believe the next two or three decades will see a great expansion of social accounting.

The most familiar and extensive use of social accounting today is in the field of national income. But this is only one of its potential uses. To an accountant the idea of a national balance sheet seems a logical corollary of the idea of a national income statement. Economists have had a great deal to say about wealth, but they have only begun to approach the study of wealth via social accounting. We haven't done much toward constructing a national balance sheet.

The subject of money, credit, and moneyflows lends itself to a social accounting approach. But a different approach to this subject has been customary, an approach in terms of an analogy to a physical, hydraulic circuit. Although Irving Fisher gave a great impetus to the social accounting approach to national income and wealth, he used the customary hydraulic approach to moneyflows. So did J.M. Keynes. The social accounting approach to moneyflows is a recent development. I think the study in which I have been engaged may be called the first comprehensive effort in this direction. The slow development of a social accounting approach in this field is, I think, due in large part to the fact that a quite different kind of social accounting approach is needed here from that appropriate to national income.

If this approach has been slow in developing, the need for it nonetheless is urgent. The subject of money, credit, and moneyflows is a highly technical one, but it is also one that has a wide popular appeal. For centuries it has attracted quacks as well as serious students, and there has too often been difficulty in distinguishing a widely held popular belief from a competently formulated and tested scientific hypothesis.

I have said that the subject of money and moneyflows lends itself to a social accounting approach. Let me go one step farther. I am convinced that only with such an approach will economists be able to rid this subject of the quackery and the misconceptions that have hitherto been prevalent in it.

But what are moneyflows, and how can they be measured? Briefly, moneyflows are sources and dispositions of money that arise out of transactions between two transactors. Let me emphasize the two transactors. There are transactions, as the accountant uses the term, that involve only one transactor and that are not moneyflow transactions, e.g., debit depreciation expense, credit depreciation reserve. Because moneyflow transactions involve two transactors, the social accounting approach to moneyflows rests not on a double-entry system but on a quadruple-entry system. Let me give the journal entry for your purchase of a pound of beefsteak from the cash-and-carry. For the cash-and-carry, debit cash \$1.30, credit receipts from customers \$1.30. For you, debit customer expenditures \$1.30, credit cash \$1.30.

I have said that the moneyflows of our economy can be summarized in financial statement form. The national income for any year can be summarized in a statement that takes the form of a single balancing account. But to summarize moneyflows usefully we must divide our economy into a number of sectors or groups of transactors and prepare a separate balancing statement for each sector. We need an exhibit that will report each moneyflow both as an inflow to some one sector and as an outflow from some other. The need for such an exhibit is one of the major differences between the social accounting approach to national income and that to moneyflows. I shall mention others presently.

But we can get a better idea of the nature of moneyflows if we consider first the form of financial statement appropriate to exhibit them. A major task in the moneyflows study I have been making was the development of this form of statement. There are four criteria for such a statement.

1. To reveal moneyflows, if we take the term naively, the statement should be on a cash basis. In general such a basis was adopted, but considerations of expediency led to one very significant deviation from a strict cash basis, to be noted shortly. I shall therefore refer to the statements developed in the study I have been making as being on a moneyflows basis.

2. To facilitate interpreting and interrelating the statements for the several sectors of the economy it seems essential to adopt a standard form for all of them. One problem such a standard form involves is the diversity of accounting conventions. We have one set of conventions in the general business field, quite a different set of conventions for government accounting, a still different set for insurance. The statement form must be a kind of greatest common denominator for the various accounting conventions.

3. The statement form should reveal not only moneyflows but also cash balances and various other balances that perform similar or closely related functions.

4. Except for changes in cash and related balances, moneyflows should so far as feasible be reported gross; inflows should not be netted against outflows; all moneyflows of general economic significance should be disclosed.

No generally recognized form of financial statement fully meets these four requirements. A special form had to be devised. But it is not entirely new. It is a modification of the sources and application of funds statement. Further, it is, I believe, a form that has been implicit in a good deal of economic thinking. I call it a statement of payments and balances. Let us take the statement for households as an illustration.

Part One shows ordinary receipts—all nonfinancial sources of money—and net money obtained through financial channels. It also shows all ordinary expenditures and net money advanced to finance others or returned to others.

Statements of payments and balances similar to that before you have been prepared for the other sectors of the economy. Ordinary receipts and expenditures are detailed on the several statements in general conformity with a standard object classification of accounts. This standard classification facilitates the mak-

Table 1.1

Statement of Payments and Balances for Households (millions of dollars)

PART ONE: MONEYFLOWS									
	1935	1936	1937	1938	1939	1940	1941	1942	Source
ORDINARY RECEIPTS AND OTHER SOURCES OF MONEY									
A Gross Cash Pay.....	-	41,000	45,200	42,100	45,100	48,900	60,400	79,100	HH 101 A
B Cash Dividends.....	-	4,600	5,700	5,300	3,800	4,000	4,500	4,300	HH 101 D
C Cash Interest.....	-	2,800	2,700	2,700	2,700	2,700	2,700	2,500	HH 101 G
D Net Owner Take-Outs.....	-	8,100	10,000	8,800	9,000	10,200	13,000	15,700	HH 101 K
E Receipts from Customers (for Secondhand Goods).....	-	120	140	120	140	160	180	100	HH 101 P
F Net Payments for Real Estate Transfers.....	-	800	800	800	800	800	800	800	HH 101 Q
G Tax Refunds.....	-	10	20	20	20	30	30	30	HH 101 V
H Unemployment Compensation Benefits.....	-	0	3	400	440	540	360	360	HH 102 A
J Benefits from Other Social Insurance Funds.....	-	280	340	440	480	540	620	740	HH 102 G
K All Other Insurance Benefits.....	-	2,500	2,600	2,700	2,800	2,800	2,800	2,800	HH 102 T
L Public Purpose Payments.....	-	3,460	1,320	1,480	1,560	1,620	1,600	1,560	HH 103 I
M Total Ordinary Receipts.....	-	63,700	67,800	62,800	66,800	72,300	87,000	107,900	A thru L
N Net Funds Obtained through Financing.....	-	0	0	400	0	0	0	0	-p when p=zero
P Total Sources of Money.....	-	63,700	67,800	64,200	67,500	72,300	87,400	110,800	M+N ¹
ORDINARY EXPENDITURES AND OTHER DISPOSITIONS OF MONEY									
Q Gross Cash Pay (Chiefly to Domestic Servants).....	-	760	880	760	860	940	960	1,100	HH 201 C
R Cash Interest.....	-	1,360	1,380	1,320	1,320	1,400	1,540	1,300	HH 201 D
S Gross Rents.....	-	3,500	3,600	3,800	3,900	4,000	4,500	4,500	HH 201 E
T Spent by Households as Customers.....	-	47,400	51,000	48,500	51,200	55,100	63,700	69,700	HH 201 F
U Investments in Construction.....	-	660	800	800	1,040	1,200	1,420	800	HH 201 P
V Taxes Collected.....	-	2,600	3,700	3,500	3,200	3,500	4,500	7,100	HH 202 X
W Interest Premiums.....	-	4,200	4,300	4,300	4,300	4,600	4,900	5,200	HH 203 N
X Public Purpose Payments: To Private Agencies and Institutions.....	-	960	1,080	980	960	1,060	1,040	1,260	HH 203 Q
Y Personal Remittances To Governments.....	-	180	180	160	140	180	140	100	HH 203 R
Z To Governments.....	-	30	30	30	30	30	30	40	HH 203 P
a Total Ordinary Expenditures.....	-	61,400	66,900	64,200	67,000	72,000	82,300	91,200	Q through Z
b Net Funds Advanced to Finance Others.....	-	2,200	500	0	400	100	5,100	19,600	p when p=zero
c Total Dispositions of Money.....	-	63,700	67,800	64,200	67,500	72,300	87,400	110,800	a+b ²

PART TWO: LOAN FUNDS									
	1935	1936	1937	1938	1939	1940	1941	1942	Source
ASSETS, DECEMBER 31									
d Currency and Deposits.....	29,000	31,800	32,200	32,400	34,900	36,600	40,200	47,200	HH 301 H d
e Federal Obligations.....	9,300	9,800	10,400	10,000	10,200	10,700	13,600	22,300	HH 301 I e
f Other Loans and Securities.....	110,700	110,500	110,500	110,300	109,400	108,900	108,600	108,900	HH 301 J f
g Total Loan Funds Receivable.....	149,000	152,000	153,100	152,700	154,500	156,100	162,300	178,400	d+e+f g
LIABILITIES, DECEMBER 31									
h Accounts Payable.....	2,600	3,100	3,400	3,400	3,600	3,900	4,200	3,200	HH 301 O h
i Other Debts Payable.....	21,900	21,900	21,600	21,100	21,800	22,500	22,800	19,700	HH 302 R i
j Total Loan Funds Payable.....	24,500	24,900	25,000	24,500	25,400	26,400	27,000	22,900	b+i j
COMPUTATION OF LOAN FUND FINANCING									
k Net Loan Fund Balance Receivable, December 31.....	124,400	127,100	128,100	128,200	129,100	129,700	135,300	155,500	g minus j k
m Increment in Loan Fund Balance Receivable.....	-	2,700	1,000	100	900	600	5,600	20,100	Increment in k m
n Net Gain or Loss Forgiven Debts.....	-	500	500	500	500	500	500	500	HH 302 S n
p Funds Advanced Less Funds Obtained.....	-	2,200	500	-400	400	100	5,100	19,600	m minus a p
1 Includes net sources of funds not accounted for as follows.....	0	0	0	1,000	700	0	500	3,000	
2 Includes net uses of funds not accounted for as follows.....	100	400	400	0	0	200	0	0	
3 Less than \$10 million.									

Note: Due to rounding, figures for various lines calculated by formulas given in the source columns may differ slightly from the entries shown.

ing of the statistical estimates. It also helps us in tracing the economic impact of one sector's activity on other sectors. There are thirteen main objects of ordinary receipt and expenditure in this classification, illustrated by lines A through G, insurance benefits (lines H, J, and K taken together), and lines K, S, U, V, and W.

I have said that Part One of this statement is on a moneyflows basis. Eleven of the thirteen categories of ordinary transactions, all except lines E, T, and U, are reported on a cash basis. The transaction is entered at the time of settlement. So are the cash sales included in lines E and T. But credit sales included in lines E and T and instalments to contractors (line U) are reported on a book credit basis; the transaction is entered at the time the customer is charged on the books of the seller or construction contractor.¹

Part Two of the statement of payments and balances gives a partial balance sheet. The asset items shown are called loanfunds receivable and the liability items loanfunds payable. Line k shows the net loanfund balance receivable. Changes in this net balance are due partly to writeups and write-offs during the year. The only such revaluations affecting the household statement are those for forgiven debts. When we exclude the effects of book revaluations from the increment in net loanfunds receivable, we get line p on the household statement. This appears in Part One as the net funds obtained through financing (line N) or net funds advanced to finance others (line b). Thus the changes in a sector's financial structure are related to its ordinary or nonfinancial transactions.

There are eleven sectors or transactor groups for which statements of payments and balances for 1936-42 have been prepared. They include farms, nonfinancial corporations, other nonfinancial enterprises, the federal government,² other governments, banks and U.S. monetary funds, three other financial groups, and the rest of the world. The statement of payments and balances for the rest of the world is a modified form of the balance of international payments statement. The statement for the federal government is useful not only as a part of the moneyflows measurements but also as an exhibit of federal finances standing by itself.³ Official statements are difficult to interpret. Try to find in them the total federal cash balance, for example, or federal accounts payable. The statement of payments and balances answers these and a large number of other significant questions. And it gives a consolidated report for the government considered as a single transactor. There has been an urgent need for a comprehensive federal financial statement summarizing the major aspects of fiscal policy that affect general business activity. The statement of payments and balances is a form particularly adapted to filling this need.

I shall have to ask you to imagine for a moment that you have a statement of payments and balances for each of the eleven sectors before you. I want to call your attention to four fundamental propositions that follow from such a set of statements. Let me first state them baldly and then add some qualifications.

1. For any transactor for any period total sources equal total dispositions of money.
2. A source of money for one transactor means a disposition of money by someone else, and vice versa.
3. A loanfund receivable for one transactor means a loanfund payable by someone else, and vice versa.
4. An increase in a loanfund balance receivable is a disposition of money by the holder; for someone else it means a decrease in a loanfund balance receivable or an increase in payables and a source of money. The converse holds for this proposition, too.

These four propositions follow from the assumption that the social accounting approach to the subject of money, credit, and moneyflows rests on a quadruple entry basis. But we must not forget that the eleven sector statements are not an accounting recapitulation; they are only a statistical approximation. Each of the four propositions states an equality between debits and credits, and in each case the equality may not quite hold. We must recognize the presence of statistical discrepancies in and between the eleven statements. Nor is this all. Propositions 2, 3, and 4 assert relations between two sector statements. They assume an accounting uniformity that has not been fully achieved statistically. They must be qualified also, therefore, by noting that there are deviations from a uniform accounting procedure. I shall say something about these deviations in a moment; but before doing so I should like to consider some economic corollaries of the four propositions that do not appear to be materially weakened either by the existence of statistical discrepancies or by the failure to achieve accounting uniformity.

First let me indicate how corollaries of the four propositions can be used to correct a somewhat prevalent misconception in regard to moneyflows and the nature of inflation. This misconception is fostered by speaking of banks as "creating" deposits. The process so designated is supposed by some to provide a financial source of money for all transactors taken together, a source of money to which no financial disposition of money corresponds. And the added financial source is supposed to be spent in the form of increased ordinary expenditures, and so to lead to inflation. From the point of view of social accounting these suppositions regarding the way in which moneyflows expand are sheer nonsense.

What happens when the cash balances of nonbank transactors increase? Commonly we have the following:

For banks and U.S. monetary funds

The increase in currency and deposit liabilities is a source of money.

There is an equal disposition of money—an increase in loans and securities held and/or the monetary gold stock.

For nonbank (i.e., all other) transactors

The increase in cash balances is a disposition of money.

The increase in debt to banks or decrease in portfolios is a source of money or—for the rest of the world—gold imports into the United States are a source of money.

This is what commonly happens. It does not cover all the possibilities but it covers what is presumably meant by saying banks “create” deposits. And there is no net financial source of money either for banks and U.S. monetary funds or for nonbank transactors. In each case what we have is change in the composition of the net loanfund balance receivable, not a change in the amount of the net balance.

Probably the most important qualification to add to this statement of the case is that an increase in nonbank cash balances, if initiated or encouraged by banks, is likely to mean reduced interest rates.

The second group of corollaries I wish to mention is far more significant. It is also a far more complicated affair and I shall only be able to outline it. First let me reformulate propositions 2 and 4. For all transactors together:

5. Total ordinary receipts equal total ordinary expenditures.
6. Money advanced or returned minus money obtained through financial channels equals zero.

Now, these two propositions do not hold for the individual transactor. He has more or less discretion to increase his ordinary expenditures and to make up any excess of such expenditures over ordinary receipts by drawing down his net loanfund balance receivable. A transactor's discretion to increase his ordinary expenditures will be limited by various factors including the size of his balance and his credit standing. The individual transactor has more or less discretion not only to expand his ordinary expenditures but also to contract them and add to his net loanfund balance receivable.

Cyclical expansions in the total moneyflows in the economy are brought about when some transactors dishoard their loanfund balances and expand their ordinary expenditures. Let us call transactors who so initiate expansion “bulls.” The money required by bulls to finance their cash deficits is always and necessarily advanced or returned to them by others. Let us state this point in social accounting form:

For bulls

The excess of ordinary expenditures over ordinary receipts equals money obtained through financing. Total sources equal total dispositions of money.

For all others together

The excess of ordinary receipts over ordinary expenditures equals money advanced or returned. Total sources equal total dispositions of money.

For all transactors

Total ordinary receipts equal total ordinary expenditures.

Essentially the process by which an expansion in moneyflows—and an expansion in general business activity—is initiated is one in which some transactors, bulls, exercise their discretion to increase their ordinary expenditures. They obtain the money for this increase through financial channels. Others get increased receipts and advance or return money to bulls through financial channels. Thus the federal government's ordinary expenditures expanded during the war and it made up its deficit by borrowing. For other sectors taken together, ordinary receipts increased more than ordinary expenditures by an amount just sufficient so that they absorbed the additional U.S. securities.

The process by which a general contraction in moneyflows is initiated is somewhat analogous. I shall not stop to outline it except to say that some transactors exercise their discretion to curtail ordinary expenditures and add to their net loanfund balances receivable, to stint and hoard. We call such transactors "bears."

In addition to bulls and bears there are many transactors who are relatively passive; they just follow the leader. They are called "sheep."

A major finding of our moneyflows study is that the moneyflows of bulls, bears, and sheep have quite distinctive patterns. The sector statements of payments and balances provide information that, during most of the period covered by the study, enable us to say with a good deal of confidence which sectors are actively promoting expansion or contraction of business, and which are relatively passive. I submit that this finding is of great potential importance. To test it out we shall need moneyflow measures on a current basis.

I have indicated that banks do not create a financial source of money for anyone, and that they do not initiate inflation. But they do participate very extensively in the moneyflows that pass through financial channels from one nonbank sector to another. In fact, it seems fair to say that banks *are* the channels for a substantial part of financial moneyflows. For this reason banks can do a great deal to facilitate the process of expansion of total moneyflows and to aggravate the process of contraction. Statistical measures of this participation can be derived from the statements of payments and balances. If, as I hope, it proves feasible to compile these measures of bank participation in financial moneyflows currently, the informational basis for our credit policy should be very materially strengthened.

We shall have to leave the subject of the economic corollaries of the quadruple-entry system with these somewhat inadequate comments. For simplicity I have spoken as if there were no statistical discrepancies and no deviations from accounting uniformity. As the moneyflow estimates stand, deviations from accounting uniformity are less in evidence than they should be. This is because it is often necessary to estimate a debit item on one statement from a credit item on

some other statement, or vice versa. There are three kinds of deviations that have had to be reckoned with:

1. those due to differences in the timing of entries into the accounts;
2. those due to differences in the valuation of loanfund balances;
3. those due to differences in the classification of accounts.

I can only give an illustration of each.

Theoretically we might expect the cash balances of nonbank transactors to equal the currency and deposit liabilities of banks and U.S. monetary funds. Actually the estimated cash balances are smaller. This is due principally to the mail float. The mail float also tends to produce an opposite discrepancy between trade receivables of all transactors and total trade payables. There are always cheques in the mail in transit between maker and payee. On the makers' books such cheques have been credited to cash and debited to some other account, presumably in most instances debited to trade payables. On the payees' books they have not yet been debited to cash and credited to trade receivables. These cheques constitute the mail float. It tends to produce a credit balance in what I call the national currency and deposits account and a debit balance in the national book credit account. These two mail float discrepancies represent the only important kind of deviation from a uniform timing of entries that shows up in the estimates.

To the extent that we have independent data on portfolios, the stocks they include are in general presumably valued on a cost or market formula. In the corporate sector statements⁴ an attempt has been made to show stock outstanding on a paid-in-capital basis. Chiefly for this reason the value of total loans and securities held exceeds the value of outstandings.

So far as the moneyflows figures are concerned, this difference is of consequence only to the extent that valuations are changed during the year. In computing the net financial moneyflow for any sector it is necessary to exclude the effect of portfolio valuation changes on the total book increment in net loanfunds receivable. With present data this involves a good deal of guessing.

There are several points at which it has seemed wise to deviate from a standard classification of accounts. None of them greatly affects the overall picture. The monetary gold stock affords an illustration. This item is treated as an asset of banks and U.S. monetary funds. A secondary factor in changes in gold stock is domestic production. The sale of gold by domestic producers is treated in the same way as the sale of copper or zinc. Thus an increase in the gold stock from domestic sources appears on the statement for banks and U.S. monetary funds as a financial disposition of money and on the statement for nonfinancial corporations under receipts from customers. To a minor extent this tends to make money advanced or returned by all transactors exceed money obtained through financing, and receipts from customers exceed the total of customer expenditures.

Furthermore, because of this deviation from a standard classification of accounts, there is a minor part of the monetary gold stock (i.e., of a loanfund receivable by banks and U.S. monetary funds) for which there is no corresponding loanfund payable item on the statements of payments and balances for other transactors.⁵

There are various important aspects of social accounting for moneyflows that I can only mention. The statement of payments and balances for a business corporation is radically different from the ordinary type of financial statement, though the moneyflow statement can be derived from the other if sufficient object detail is disclosed and if there are appropriate supporting schedules on some of the balance sheet changes. A corporation is quite likely to show a deficit in its ordinary transactions account when on the usual reckoning it is in the black, and a surplus in its ordinary transactions account when it is in the red. But this fact does not reflect on the significance of either type of statement; each of them tells a significant story.

Part One of the statement of payments and balances is clearly not a cash account. But I suspect that some economists have commonly had something like Part One in mind when they thought they were talking about a cash account.

However, it must be admitted that Part One omits a very large volume of moneyflow transactions. This is primarily because money obtained or advanced through financial channels is shown on a net basis. The transactions that are netted out, e.g., the cashing of a cheque, I call technical transactions. Although the volume of technical transactions is very large, I think their general economic significance is very small.

There is one item of unfinished business: the differences between the social accounting approach to national income and wealth and that to moneyflows. I have mentioned the quadruple-entry basis for the latter and the need for exhibiting moneyflows through a number of separate sector statements. To construct a national income statement or a gross national product statement it is necessary to divide the economy into two parts, productive enterprises on the one hand and households and quasi-households on the other. A consolidated income account is then prepared for productive enterprises. The several statements of payments and balances are not income statements and in general they are not consolidated but combined statements; transactions between transactors in the same sector are shown.⁶ The total of moneyflow transactions in the eleven sector statements is well over three times the gross national product. Nonetheless, there are various transactions revealed in the gross national product account that are not moneyflows. Some of these are accrual items like depreciation, but there are also imputed items, such as the value of food produced and consumed on the same farm.

These are the main differences between the two types of social accounting approach. The national income and product accounts present one perspective on our economy, a consolidated report on the operations of productive enterprises on an accrual and imputation basis; the statements of payments and balances

give quite a different perspective, a set of combined sector statements of moneyflows and loanfunds. Both perspectives are essential for a proper understanding of our economy. Further, we clearly need to tie the two perspectives together, but I cannot tell how that is done this afternoon. I can only say that the contrast I have drawn between the two perspectives makes that job sound a lot tougher than it really is, and that to tie together the information in the national income and products accounts and what we know about the financial structure of our economy—about loanfunds—has been a major objective of the study.

I think you will agree that the social accounting approaches to the study of economics use a number of accounting concepts and a number of accounting procedures extensively. I hope enough has been said by Hagen, Friend and me to convince you that social accounting has already produced a good many findings that are very important for public policy and that it is likely to produce a great many more.

It seems fair to say that accountants have not contributed much to social accounting thus far. But their help is urgently needed. I, for one, hope that an important contribution from this association to social accounting will grow out of this session.

Notes

1. In the present state of our information it has not been possible to conform as fully to the fourth criterion as would theoretically be desirable. To a minor extent there is netting of some ordinary receipts and expenditures in the various sector statements.

2. Monetary funds and funds of the District of Columbia and of territorial governments are included in other sectors rather than as parts of the federal government.

3. See *Concerning a New Federal Financial Statement, Technical Paper No. 5* (New York: National Bureau of Economic Research, 1947).

4. These three sectors are entitled industrial corporations, banks and U.S. monetary funds, and security and realty firms et al. The third is partly noncorporate.

5. A similar comment applies in connection with the item known as "Treasury currency," which is also a loanfund receivable by banks and U.S. monetary funds.

6. The statement for banks and U.S. monetary funds and the statement for the rest of the world are consolidated statements.

**BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM**

**Concept of the Flow-of-Funds
Accounts**

(1975)

The flow-of-funds system of national accounts is designed to bring the many financial activities of the U.S. economy into explicit statistical relationship with one another and into direct relation to data on the nonfinancial activities that generate income and production. The purpose of the accounts is to provide, systematically, the aggregate measures of transactions needed to identify both influences of the nonfinancial economy on financial markets and reciprocal influences of financial market developments on demand for goods and services, sources and amounts of saving and investment, and the structure of income. The accounts are intended to provide an empirical base for exploring such questions as the sensitivity of borrowing to interest rates as against other influences, the effects of cost and supply of credit on physical investment demand, the role of money holdings in the public's structure of assets and liabilities, and the relation of financial positions—levels of assets and liabilities—to demands for goods and services, for credit, and for investment in financial claims.

The flow-of-funds system focuses on such questions in a macroeconomic setting that covers, as far as possible, all of the institutional groups and all types of transactions in the economy. Some elements of the system exist elsewhere and separate from the structure—as statements of, for example, corporate finance, government finance, balance of payments, money and banking activities, individuals' saving, residential finance, and security market activity. These elements are incorporated into the system as integral parts, together with informa-

Reprinted from Board of Governors of the Federal Reserve System, *Introduction to Flow of Funds* (Washington, DC: Board of Governors of the Federal Reserve System, 1975): 2–27. Appendix tables and references to them have been deleted.

tion from income and product accounts on saving and capital formation. Each such element is one aspect of an integrated economy, and each connects with the others in several ways. The security markets, for example, are a point of intersection among business developments generating long-term credit needs, international capital movements, bank credit availability, flow of credit through financial institutions, and the financing of government deficits. When all of the relevant information is put together in mutually consistent fashion in one framework, each element is seen as part of a broader macroeconomic system, and its connection with the other parts can be made explicit enough for analysis. Like the national income and product accounts published by the Department of Commerce, the flow-of-funds system is a social accounting structure that records both the payment and the receipt aspects of any transaction included in the system and that includes a balance in each account of the structure between total payments and total receipts. The flow-of-funds accounts can in fact be viewed as a direct extension of the Commerce income and product structure into the financial markets of the economy, with the purpose of establishing direct linkages between the Commerce data on saving and investment—the capital account in the income and product structure—and the lending and borrowing activities that are associated with saving and investment.

Model Account Structure

The nature of those linkages and, more generally, the relation of financial markets to the nonfinancial activities of the economy are portrayed in Table 2.1. The table is a severely condensed and simplified form of the published flow-of-funds matrix that maps more completely the basic structure of the flow-of-funds system.¹ The arithmetic of the matrix is fairly simple, and when applied to the full system of accounts it provides a basis for understanding both the accounting relationships among the flow-of-funds time-series tables and the analytic approach underlying the system.

Very briefly, Table 2.1 is a statement of capital account for the economy as a whole, showing investment in assets in the uses columns and means of financing that investment in the sources columns. The table divides the economy into several sector groups, each of which has a column in the matrix, and all transactions of each group are recorded on one or another of the matrix rows. The top row—saving—is for each sector the net sum of current receipts from income less current outlays for consumption, operating expenses, and so forth. Saving appears as a net amount available from current operations for investment purposes. Other amounts are borrowed in financial markets by each sector, and borrowings and saving together are the sources of funds used to acquire physical and financial assets.

A distinction is drawn between nonfinancial transactions reflected in the first two rows of Table 2.1—purchases and sales of goods and services, transfer

Table 2.1

Model Flow-of-Funds Matrix (hypothetical data; billions of dollars)

Transaction category	Private domestic nonfinancial sector		Government sector		Financial inter-mediaries sector		Rest of world sector		Totals		Memo: domestic totals	
	Use	Source	Use	Source	Use	Source	Use	Source	Use	Source	Use	Source
Nonfinancial:												
1. Saving		179		-10		5		-4		170		174
2. Capital outlays	170		-		-		-		170		170	
Financial:												
3. Net financial investment	-9		-10		-5		-4		-0		-4	
4. Total financial uses and sources (5+6)	-69	-60	-5	15	-70	-65	-3	7	-147	-147	-144	-140
5. Deposits at financial intermediaries	50		3		55	2			55	55	53	55
6. Loans and securities	19	60	2	15	70	10	1	7	92	92	91	85

Note.—This table compresses about 20 sectors in the full system into four columns for sector types that are to be distinguished in the present discussion, and the rows are a similar grouping of transaction categories. In addition, the matrix is simplified by omitting the row and the column for discrepancies and a number of items peripheral to the main stream of financial transactions. These omitted items are treated in the model as nonexistent in the simple economy shown. Of the omissions, the most important for the discussion that follows is insurance and pension reserves, which are a major form of intermediation.

payments and receipts, and taxes—and financial transactions in the following rows—net changes in the capital amounts of claims owed as liabilities or held as assets by each sector. All of the financial transactions of a sector are combined into a net financial investment that is the excess of the sector's lending (financial uses) over its borrowing (financial sources).

The two most basic constraints in the matrix are (1) that for each sector, total investment, which is the sum of capital outlays plus net financial investment, is by definition equal to the saving shown in row 1 for the sector, and (2) that on any one row of the matrix the sum of all uses of funds shown across the columns is equal to the sum of all sources of funds in that row. (Rows 1 and 2 of Table 2.1 are the source and use sides, respectively, for a single row covering all nonfinancial transactions together.) With balance vertically between saving and investment and horizontally between payments and receipts, each column and each row constitutes one full account of the structure, and the relationships among columns, among rows, and between columns and rows express the interlocking nature of the accounting system as a whole.

As one illustration of the structure, the government column in Table 2.1 can

be seen to be a particular form of budget statement, with a nonfinancial deficit in the first row offset by a net sum of changes in cash balances, loans, and debt outstanding in the rows below. This column is a balanced account that differs from other budget statements for governments mainly in that it distinguishes sharply between nonfinancial and financial transactions and arranges transactions so that they can be identified across the rows in the accounts of other parties to the transactions. The rest of the world column is similarly a particular form of balance of payments statement, arranged so as to connect it with other sector columns along specific rows. A loan from the government to abroad, for example, appears on row 6 as a government use of funds and a foreign source of funds, regardless of how it may be treated in other budget statements or balance of payments statements. Each of the two loan entries—the use and the source—is then playing a double role in the matrix, vertically as a component of its sector's column balance, and horizontally as part of the row balance. In the row they of course balance each other, but vertically they integrate in more complex ways with the other transactions of the two sectors separately. The interlock of the system consists of establishing such double roles, horizontally and vertically, for all transactions of all sectors in the system simultaneously. The result is an integrated structure that can be used to measure linkages either vertically or horizontally or, in the most complete forms of analysis, in both directions simultaneously.

The condition that saving equals investment for each sector is identical in form with the well-known equality of saving and investment for the overall economy in income-and-product accounting. For the total economy, investment on a consolidated basis consists of outlays for capital goods plus net foreign investment, the excess of lending abroad over borrowing from abroad. In the flow-of-funds accounts, similarly, each sector's investment consists of its purchases of capital goods plus a net financial investment that includes net lending to the rest of the domestic economy as well as to abroad. In the model matrix (Table 2.1), the first three rows state the equality of saving and investment for each sector, and at the right of the model matrix is a separate column of totals for the three domestic sector columns of the table. This memo column is one form of the capital account in the Commerce Department income and product system. It can be seen that the matrix, in its domestic sector columns, constitutes a deconsolidation of that capital account, with capital outlays distributed among the domestic sectors and for each a net financial investment that is a more general form of the net foreign investment in the consolidated total.

This relation to the Commerce domestic capital account is in the first three rows of the matrix. In the lower rows, the matrix goes into detail on the forms of lending and borrowing by each sector that underlie the sector's net financial investment. Only two types are shown on the model—deposits at intermediaries and loans and securities—but the full matrix has many more than this. For each of these financial rows a full accounting of purchases and sales of the particular type of instrument is required in the system. It is this detailing of credit transac-

tions in the capital account that brings the financial statistics of the economy into coherent relation to one another and into direct relation to the nonfinancial statistics in income and product accounts. The accounting link to nonfinancial transactions is net financial investment (row 3 of Table 2.1), but the economic substance of the information is in the interactions among specific types of credit flows—deposits and loans—and between such flows and specific forms of capital outlay, income generation, and saving, all within the accounting constraints of the system.

The matrix goes beyond the Commerce capital account in that it incorporates the foreign sector (rest of the world) as an explicit column. This form requires that the consolidated domestic capital account be shown as a memo column, but it has the advantage that for each financial transaction row the matrix states directly all of the transactions in the market, whether domestic or foreign. Alternative forms tend to complicate or obscure the matrix without adding information.

Analytic Role of Matrix

The matrix is an essential framework for both calculating and using financial market statistics on an economy-wide basis. It is general enough in form to assimilate the creation of new types of financial instruments, new forms of relationship, and changes in emphasis or practice that are continually occurring in individual financial markets. The explicit constraints of the system enforce a consistency of analysis not easily reached without the framework, particularly in questions at a macroeconomic level, where all market forces interacting with one another are to be accounted for. Such questions become operable only when the transactions involved have been stated within the matrix context on a complete basis but without double-counting.

The role of the matrix for such purposes can be seen by the simple exercise of assuming some major financial development—such as a sharp rise in government borrowing or in deposit flows to banks—placing that flow in its appropriate cell of the matrix, and working out even a minimum possible conjunct set of entries that must exist to keep the matrix in balance. If the example is in government borrowing, that source of funds to the government must be mirrored in the government column in some combination of a nonfinancial deficit (negative saving) and government lending as an offsetting use of funds, since the money raised is obviously being absorbed in one way or another. At the same time, the borrowing itself must be matched by an equal amount of lending somewhere along the row that carries government securities. And in whatever column that lending appears, there must be a source of funds available for this use. In the simplest situation that source can be the positive private saving and borrowing from the government that are already implied in the government account. For example, a minimum complete accounting for the government borrowing might be:

	Private	Government
	Use Source	Use Source
Saving	7	-7
Government loans	3	3
Government securities	10	10

When this form of speculation is extended from the merely possible into the realm of the likely, economic analysis enters the exercise. In the example above there are questions of the probable demand by private sectors for other types of financial assets, such as cash and other deposit claims, that are competitive with governments as investment forms and that affect the volume of flow into financial intermediaries and the volume of credit supplied by intermediaries. More broadly, analysis raises questions as to the circumstances that generated the government deficit, including income distribution and private demand for capital goods, and the resulting influences on credit market flows. Each aspect of the picture interacts with the others, and as the various tendencies are itemized they are to be fitted into the frame of the whole in mutually consistent forms.

The operation of the matrix is also illustrated by considering the question of what happens when the money supply increases. Money is a liability of the banking system and an asset of the public; if it increases, the increase must be accompanied by some combination of a decrease in other bank liabilities, an increase in bank assets, and offsets in the accounts for other sectors. The organization of the accounts forces these contra-entry questions to the surface and in the process spells out the initial question in a complete form.

Analysis of this kind can be applied to an actually expected set of developments by using the matrix structure as a device in forecasting or projecting the future, with the specific function of keeping individual parts of the forecast in touch with one another. The merit of such constrained systemwide forecasts is that each element can be tested by the plausibility of its counterparts in other areas of the matrix. The structure as a whole is reasonable only when all of its parts are reasonable. Whether the elements are derived econometrically from empirical models or put together judgmentally by hand, there is room in the procedure for successive approximations that approach the final result by working out the effects of each change on the rest of the structure and by then working back from the effects to revised versions of the initiating change.

Developing a complete forecast on this basis illustrates the integral role of financial market behavior in capital theory and in general theories of income, production, and economic growth. For each individual in the economy, the choices he makes as to consumption, physical investment, financial investment, and borrowing are related to one another and are confined only as a group within the limits of his income and net worth. The option of borrowing lets a person shift his consumption and investment patterns over time, and higher levels of debt allow him to carry higher levels of either physical or financial assets at any

time. He may in his mind attach priorities to one or another use of his income, but in practice all of his demands work against one another to some extent and indeed are also influencing the amount of income he tries to earn.

The columns of the matrix recognize these relations among the activities of an individual transactor by putting all of his transactions together in the general form of a statement of sources and uses of funds.² The system becomes macro-economic when the columns for all sectors are put against one another to generate the market summary rows where the demands of different transactors impinge on one another. The effect is a joining of financial investment analysis directly to theories of production, income, saving, and physical investment in a manner that adds generality to the model as a whole.

Stocks and Flows

The immediate connection between financial markets and nonfinancial activity is in terms of net flows of claims, since it is as flows that financial markets absorb funds from income and supply funds to spending. These financial flows are always increments in amounts of assets and liabilities outstanding, however, and the levels of these claims in existence are as much a part of the picture as the flows themselves. Economic equilibrium (in any sense of that term) must be a balance simultaneously among stocks, among flows, and between the stocks and flows, a consideration that is reflected not only in advanced models but also in such rule-of-thumb indexes as liquidity ratios, turnover rates, and debt-service coverage by income.

Over the period covered by the flow-of-funds accounts, several types of credit have shown fairly stable relations to expenditures or receipts in terms of flows, but the flows have been at such rates as to generate strong secular drifts, relative to activity, in levels of debts and assets, either upward or downward. The meaning of these drifts in stock relationships, or even whether they have meaning, is an important aspect for financial analysis for the near and intermediate future, and for such questions data on stocks of financial claims outstanding are included in the published data on a basis parallel to the tables on flows, including both a matrix of claims as assets and as liabilities, and time series compilations for individual rows and columns.³

Intermediation and Primary Credit Flows

The generality of the matrix tends to obscure certain structural aspects of the financial system that are of continuing interest in analysis. These structural aspects have to do with concepts such as intermediation, "primary" demands for credit, and "ultimate" sources of credit—or more broadly with "double-counting" of credit flows and the position of financial institutions in the system. In a general sense, intermediation consists of borrowing for the purpose of lending rather

than for nonfinancial outlays. The term is usually associated with financial business, such as banks, savings institutions, insurance companies, and investment companies that concentrate on such activities. The distinction between intermediaries and nonintermediary sectors must be recognized as institutional and a question of degree rather than a concept definable in theory; on the one hand households, nonfinancial business, and governments also engage in intermediation to some extent, whereas on the other hand intermediaries are subject to the same *general* investment principles as nonfinancial sectors. Nevertheless, the difference in degree is extreme and the distinction justified in practical analysis.

Intermediaries tend to specialize in the forms of debt they offer, or the forms of credit they extend, or both. Insurance companies, for example, raise funds primarily through policy premiums but invest broadly in credit markets, while finance companies specialize in their lending but not their borrowing forms. Savings and loan associations are specialists both in borrowing—through savings accounts—and in lending—mortgages. In whatever way they specialize, however, these institutions are filling a gap between the types of claims the nonfinancial public wants to hold as assets, such as liquid deposits and insurance reserves, and the very different types of claim the public wants to (or is able to) owe as debts, such as bank loans, consumer credit, and mortgages. With or without intermediaries, the total of claims held as assets by nonfinancial transactors is nearly equal to the total of their debts, because directly or indirectly they owe the debt to one another. But with intermediation the composition of their assets becomes very different from the composition of their debts. The intermediaries are thus performing a transformation process within the financial markets between the asset and the liability sides of the public's balance sheet.

Intermediaries are important to analysis in a number of ways. Their presence in the market broadens enormously the forms of both financial investment and borrowing available to the public—there is no question that capital formation, saving, income, and consumption are all higher than they would be without the catalytic influence of intermediaries in raising financial flows. In the U.S. economy a large part of all credit goes through intermediaries. In the short run much of financial analysis is concerned with how well intermediaries are meeting demands for the specialized forms of credit they offer with the funds they are able to attract from savers. Legal constraints on their rate structures, lending practices, and forms of borrowing often prevent intermediaries from adjusting fully to current conditions and decision patterns, causing sizable shifts of funds into and out of them. On the other hand intermediaries frequently introduce new practices or new credit instruments that also have major effects on the structure of flows. Both the constraints and the innovations of intermediaries have to be taken into account in even simple and summary analysis of economic development.⁴

Flow-of-Funds Summary Tables

The process of intermediation immediately implies some basic or primary flow of credit in the economy that in part passes through these institutions and raises the question as to what that basic flow might be or, more specifically, how it might be defined in an analytically useful form. The matrix itself is too general in form to show such a concept, since it puts financial intermediaries parallel to other sectors and adds up totals along the rows that include all sectors indiscriminately. This matrix form accommodates both the intermediary-type debt owed by nonfinancial sectors, particularly governments, and the marketable debt of intermediaries, such as bonds and open market paper, that are not distinguishable as debt instruments from the same types of claim owed by nonfinancial sectors.

Nevertheless, the elements needed to approximate a concept of a basic flow of credit that may or may not be intermediated can be abstracted from the matrix, and one such approximation is put together in the two credit market summary tables that appear at the beginning of most flow-of-funds presentations, one on the structure of borrowing in credit markets and the other on sources and forms of supply of funds to credit markets. The summary tables are not directly part of the flow-of-funds structure, but they are useful in outlining relationships among forms of borrowing, among forms of lending between credit demand and supply, and between intermediary and direct lending in markets.

Using figures from the model matrix in Table 2.1, the two summary tables are illustrated together in Table 2.2, with borrowing in the upper part and credit supply in the lower. Table 2.2 identifies the intermediation process through an institutional distinction, isolating certain groups of firms that are mainly in the business of borrowing funds for the purpose of relending and treating these groups as a channel of financial flows rather than as a primary source of credit demand or supply. The primary credit flow, on the first line of the table, is thus borrowing by everyone else, that is, nonfinancial sectors, itemized by sector in the next three lines. The total of 82 is less than the matrix total of 92, on the bottom row of Table 2.1, by the amount of credit market borrowing by intermediaries.

The full form of the table includes the types of instruments used as well as a listing of borrowing sectors.⁵ Also included there is a comparison, for households and business, between funds raised as shown on the upper part of the table and their major forms of capital expenditures that generate private credit demands. That comparison is not included in Table 2.2.

Part II of Table 2.2 is a summary structure of the sources of supply for the credit flows listed in Part I. It is more complex than Part I in that it shows supply at more than one level simultaneously—direct lending in credit markets by nonfinancial sectors and by intermediaries as well as the sources of funds to intermediaries to finance their part of the direct credit supply. The first item (line 6 in Table 2.2) shows lending activity by Federal Government units, federally sponsored intermediaries, and the Federal Reserve, a source of funds to credit

Table 2.2

Model Credit Market Summary (billions of dollars; figures from Table 2.1)

1.	I. Funds raised by nonfinancial sectors	82
2.	Government	15
3.	Foreign	7
4.	Private domestic nonfinancial	60
5.	II. Sources of credit supplied	82
6.	Government	2
7.	Foreign	1
	Financial intermediaries	
8.	Total funds advanced	70
	Sources of funds	
9.	Private domestic deposits	50
10.	Funds raised in loans and securities	10
11.	Other sources	10
	Private domestic nonfinancial sectors	
12.	Direct purchases of loans and securities (lines 5-6-7-8+10)	19
13.	Deposits in intermediaries (line 9)	50
14.	Total financial investment (lines 12+13)	69
15.	Credit sources not in line 14 (lines 6+7+11)	13

markets that is almost entirely directed by public policy objectives such as assistance to particular credit markets and open market operations by the Federal Reserve. Foreign lending on line 7 includes foreign private funds, but in recent years it has been dominated by foreign official transactions in U.S. Government securities as a reflection of balance of payments developments. Both line 6 and line 7 are largely external influences on credit markets in that most of the amounts that appear do not reflect profit-making decisions in the narrow sense but are rather policy-directed or almost automatic.

The middle section of Part II summarizes credit market lending by intermediaries, including commercial banks, and the main types of financing for that lending. In the Table 2.2 example intermediaries supplied credit of 70, mainly from private deposit growth but also from their own borrowing in credit markets and from other sources, such as foreign and Government deposits, insurance and pension reserve growth, and their own retained income. The several sources of intermediary funds vary greatly in relative proportions as credit conditions change, and shifts in their sources are reflected elsewhere in the table, such as in Government lending to intermediaries and the forms of financial investment by the private nonfinancial sectors.

The bottom section of Part II, beginning on line 12, integrates into the preceding picture the structure of financial investment by private domestic nonfinancial sectors—households, businesses, and state and local governments. Line 12 is their direct lending in credit markets, which consists of any of the credit flow in line 1 not supplied by Government, foreign, or intermediaries, together with

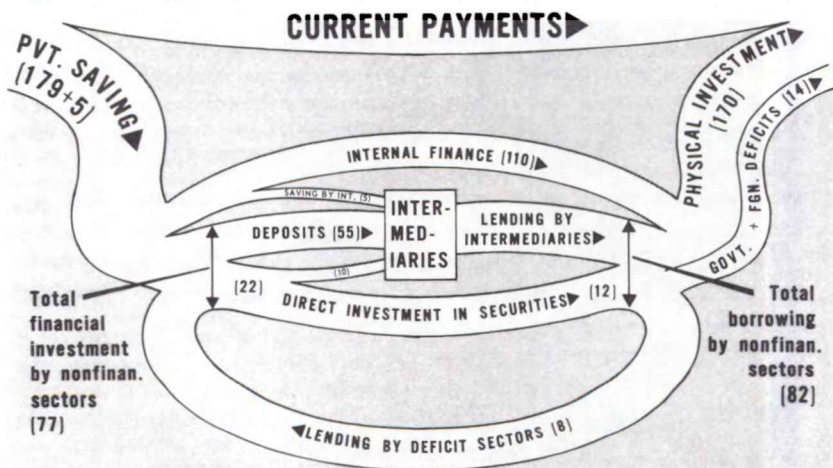
credit market borrowing by intermediaries on line 10. From the viewpoint of the private sectors, this direct lending is but one of several possible forms of financial investment, with alternatives that in the model table are wrapped together as deposits, such as checking accounts, savings deposits, and negotiable certificates of deposit. These deposits, shown here as a use of funds, are the same flows that appear on line 9 in the intermediary section of the table as a source for intermediary credit supply. The distribution of private funds between direct lending and deposit flows has a sizable influence on, although not total control over, the flow of credit through intermediaries and thus on supply of the specialized forms of credit, such as mortgages and bank loans, that come mainly from intermediaries. Line 14 contains the total flow from the private nonfinancial groups that is distributed between direct and deposit flows. It is somewhat less than total borrowing on line 1, although closely related. The difference, on line 15, consists of direct flows from Government and foreign sources and the "other" sources of intermediary lending.⁶ In recent years a major element of change in line 15 has been foreign official lending that reflects shifts in the U.S. trade balance and capital outflows in the balance of payments statements. Most movements in Government lending are reflected directly or indirectly in the private total on line 14, while intermediary "other" sources are relatively stable over the long run.

Diagram of Financial Structure

The view of the economy that is reflected in Table 2.2 is indicated in Figure 2.1, which is a picture of the Nation's capital account that, again, uses the model matrix (Table 2.1) and that abstracts in the same way from the full complexity of the system. The diagram is specific to the data in the model in that it shows current-account deficits for the government and foreign sectors on the right, in parallel with physical investment, as "uses" of private saving entering the capital account on the left; if either of these sectors had a positive current balance, it would have appeared at the left side of the diagram. In a fully detailed picture, the dissaving of any individual transactor with a negative current-account balance would also appear on the right, with treatment of financial flows parallel to a deficit government. To simplify the diagram, all of the private domestic sectors' saving is on the left, even though the total for the sector is a net sum of savers and dissavers together.⁷ The diagram takes on precision if each sector is viewed as a single person in an economy made up of only four persons, each different from the others. This primitive view can be extended easily to a more general picture with many separate units in each sector.

The diagram pictures saving entering the capital account as a diversion from the current payments stream and passing through a number of channels to finance physical investment outlays and government and foreign deficits that inject spending back into the current stream. Part of the saving goes directly into physical assets, to the extent that people buying capital goods pay for them without

Figure 2.1 Diagram of Financial Structure



recourse to borrowing, and this appears as "internal finance," the excess of capital outlays (170) over private borrowing (60). Another part of saving goes into financial assets, however, such as cash and deposits for liquidity and marketable securities for capital gains. Part of this financial investment goes directly to nonfinancial borrowers (12), but most of it is put into deposit (55) and security claims on intermediaries (10), who turn around and relend the funds to nonfinancial sectors through quite different forms of credit instruments, such as mortgages and bank loans (70).⁸ These credit flows from intermediaries combine with the lending directly from savers to make up the total volume of borrowing (82) by nonfinancial sectors that is used mainly to cover the deficits of dissavers and to pay for investment outlays not covered by internal finance.

The bottom of the diagram shows a reverse flow-of-funds from the borrowing to the lending side of the structure that is equal to the investments in financial assets made by the two deficit sectors. In the model matrix (Table 2.1), these two sectors have not limited their borrowing to the minimum amounts needed to cover their deficits but rather have found it worthwhile to borrow extra amounts that allow them to add some to their asset positions (8), in part perhaps for liquidity and in the government's case to help carry out lending programs for public policy purposes. These extra credits are borrowing for the purpose of relending and as such constitute a form of intermediation by nonfinancial sectors. The U.S. Government does in fact act as an intermediary to financial markets, floating its own securities to assist agriculture, small business, the home mortgage market, and other private markets, and a more complex diagram could show that activity explicitly. The more general point, however, is that quasi-intermediation occurs in many forms in nonfinancial sectors, that all forms of it create reverse flows in the diagram, and that they add an extra element to the

relation between the total flow of credit as defined in the diagram and the associated totals of saving and investment.

Typically, this kind of intermediation is difficult to identify, as illustrated by taking the private domestic nonfinancial sector in the diagram to be a single individual. Even though this person's saving (179) was greater than his capital outlays (170), he chose to put a substantial amount into financial investments (69) and then to borrow some of these funds again on the other side of the market in different forms (60). This is normal and reasonable behavior, since the combination of assets and liabilities he now has suits his short-term and long-term needs better than lower totals of both assets and liabilities. However, it raises the question as to whether he borrowed to invest in physical or in financial assets, and the answer is that he borrowed for the two purposes jointly in unidentifiable and even undefinable proportions. Only in special cases, such as the two deficit sectors in this model or a borrowing total that is larger than total investment outlays, can such intermediation be even partially measured.

This discussion illustrates the ambiguities in the concept of intermediation and thus in the concept of a basic or primary flow of credit that is to some extent intermediated. Intermediation can nevertheless still be a useful construct for analysis when it is given an institutional sense that is based on the characteristics of a set of financial businesses, including the legal constraints on their operations, their typical practices as borrowers and lenders, and their flexibility in changing economic conditions. Isolating financial institutions as an intermediary group brings out on a broad basis the division of financial flows between those that enter this area of specialized and constrained lending operations and those that are available only in more broadly marketable instruments. It is this institutional foundation for analysis that underlies Table 2.2. As applied to nonfinancial sectors, the concept of intermediation is too ambiguous to be useful, and it is well replaced by the integrated balance sheet view of physical investment, financial investment, and borrowing that is implicit in this discussion.

In comparison with the actual accounts as published, the diagram is primitive although accurate as far as it goes. In both the model matrix and the diagram, credit flows are limited to the main-stem group of financial claims that are handled in organized credit markets, such as securities, mortgages, consumer credit, and bank loans, and that in flow-of-funds publications are labeled credit market instruments. It is this central group of claims that is the focus of the summary tables in publications as well as in the model used for this discussion. A glance at the full matrix shows that the financial structure as a whole includes a variety of other claims, such as gold, foreign exchange, trade credit, and equities in noncorporate business. These are more specialized instruments that are also part of the financing of the economy and that appear in the accounts where appropriate, but for summary purposes they are treated as outside the credit markets proper. The diagram is also primitive in that it cannot easily show negative financial flows, such as debt repayment or reductions in asset holdings,

and because it ignores the layers of intermediation that exist among financial firms, such as bank loans to security dealers and insurance company purchases of finance company bonds.

The purpose of the diagram is only to illustrate in broad outline the relation between saving and investment on the one hand and the aggregates of borrowing and intermediation shown in Table 2.2 on the other. The financial markets absorb part of saving and supply part of the funds for spending, but the total volume of credit flows as defined here has no necessary relation, dollar for dollar, either with saving or with investment because of the opportunities for internal finance and for borrowing to carry financial assets that are suggested by the diagram. The effects of restricting or expanding credit flows are thus not necessarily or immediately on saving and investment but rather tend to be diffused throughout the system inside and outside financial markets. Such relations as exist between credit flows and nonfinancial activity must be found analytically and empirically, with credit seen both as borrowing by nonfinancial sectors and as lending by those same sectors.

Historical Relationships

Examples of the empirical relationships that exist in the data at the broadest level are illustrated in the figures on the following pages. Some of these relations are close, but the conclusions to be drawn from them must be based on analysis of the economic system as a whole. With credit flows dependent on borrowers' demands for financial assets as well as their nonfinancial outlays, the problem of identifying supply and demand separately is more complex for financial markets than for many other areas of analysis, and useful solutions to the problem are still to be worked out.

The figures start, somewhat arbitrarily, at the point of household and business borrowing, proceed to the total borrowing by nonfinancial sectors that is pictured in the diagram, connect that total to private financial investment, and summarize the results of these flows in terms of amounts of debts and assets outstanding.

Statistical relations of the figures to flow-of-funds table presentations are listed in the Notes to Figures in Table 2.4 at the end of this reading. Before being charted, all of the data used were deflated by a compound index of prices and the 1952-73 trend of gross national product in order to highlight cyclical relationships apart from the strong growth trends over the period in most of the data. A single deflator was used for all of the time series, and a rising trend in any of the plotted series indicates a rate of growth faster than the trend of GNP, although not necessarily faster than GNP growth in any short period. A series with a falling trend is not necessarily decreasing in actual dollar amounts; it may be only increasing at a slower rate than the GNP trend. The deflator itself is presented and described in Table 2.4; it is not directly part of the accounts, which show only current-dollar quantities.

Figures 2.2 and 2.3 illustrate the associations that have existed between short- and long-term borrowing in credit markets by business and households and their spending for capital goods. Capital expenditures here cover all private domestic investment in the national income accounts except capital outlays by financial sectors, and they also include purchases of consumer durables, which are consumption spending in the national income and product accounts. Figure 2.2 illustrates that net changes in short-term business credit were closely related to net inventory movements, on almost a dollar-for-dollar basis, for a long stretch of years through the 1950s and the first half of the 1960s. Since 1966 the relationship has become very much weaker, mainly because of the more diversified use of bank loans and open market paper as substitutes for or interim financing of longer-term requirements, particularly during the tight-credit periods of 1969–70 and 1973. Later figures in this set show changes in the mid-1960s in trends of total outstanding private debt and assets, and the more complex behavior of short-term credit in the years after 1965 is part of a more mature private debt structure than had existed in the 1950s. The 1969 spurt of short-term loan credit was followed by low volumes in 1970 and 1971, when many of the loans were funded by longer-term financing, but beginning in 1972 short-term credit started to show another strong growth tendency as the economy picked up speed after the 1970–71 pause. With the higher inflation rates that appeared in 1973, book values of inventories started rising much faster than the national-income measure of inventories, which is adjusted to exclude price-change effects, and in the last year of the figure the relation of short-term credit is much closer to book values than to the inventory-change component of GNP. Before 1973 there was not enough difference between book and GNP inventory movements to distinguish between them statistically in their relation to short-term credit movements.

Figure 2.3 illustrates a similar pairing of longer-term private investment and credit, which in this figure is a mixed collection of corporate bonds, mortgages, and consumer credit.⁹ In the early years of the figure the high rate of investment relative to credit was primarily in residential construction, with households investing a larger part of equity funds in new homes (and borrowing less of the purchase cost) than in later years. Beginning in 1970, on the other hand, credit flows moved ahead of investment, at first to fund the high short-term borrowing of 1969–70 that appears in Figure 2.2 and later to take advantage of the expanded credit supply available through 1972. Both business and household borrowing were unusually high after 1971 relative to net investment spending.

Figure 2.4 combines the data from Figures 2.2 and 2.3 and illustrates the extent to which movements in private capital outlays have been a dominant component of GNP fluctuations. The two vertical scales in Figure 2.4 have the same dollar gradient even though their absolute values are very different, and only during the Vietnam period of the later 1960s are the movements in GNP substantially larger than in the investment series. Total private borrowing has

Figure 2.2 Borrowing and Capital Goods Spending—Short-Term

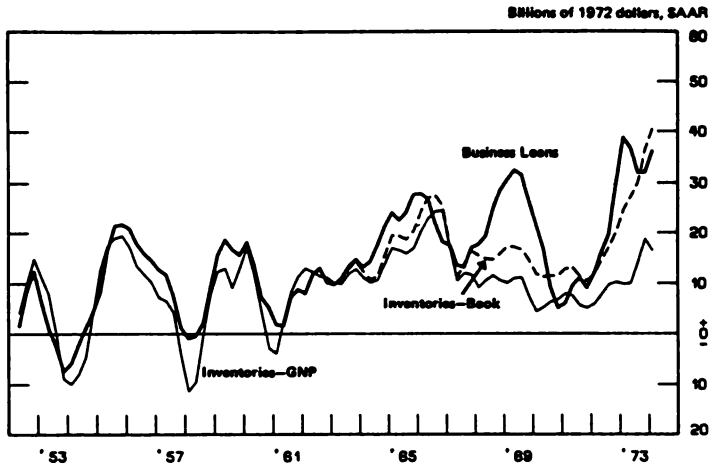
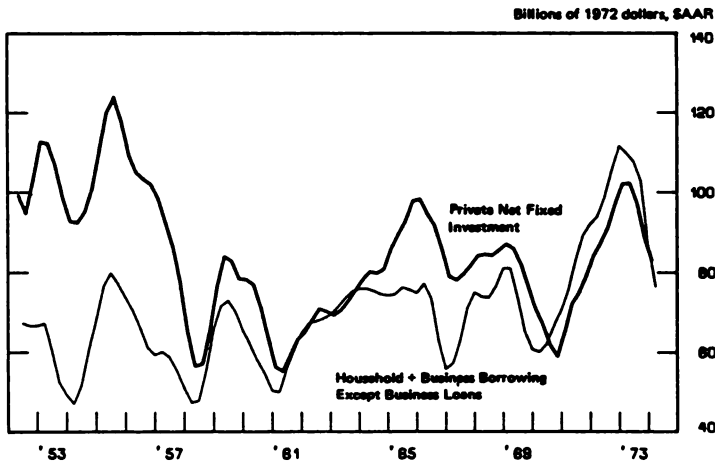


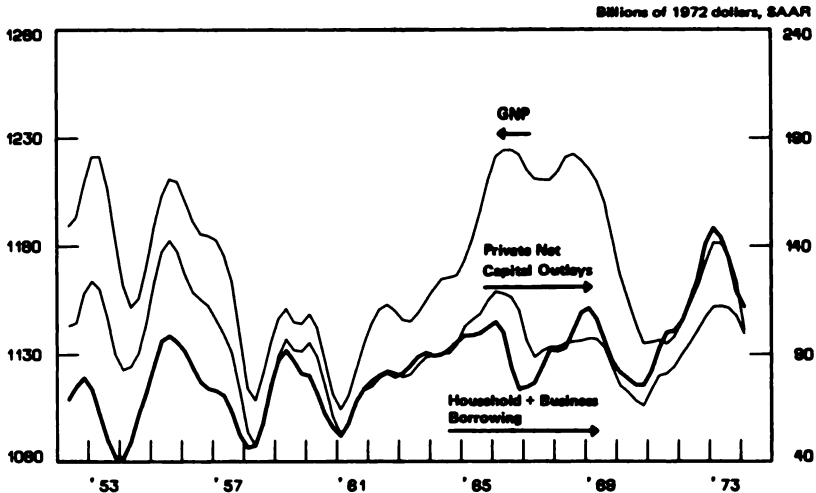
Figure 2.3 Borrowing and Capital Goods Spending—Long-Term



almost the same volatility as net investment and thus is almost as closely related to GNP fluctuations.¹⁰

Figure 2.5 completes the structure of borrowing by adding to the business and household components net funds raised by foreign borrowers, state and local governments, and the U.S. Government. U.S. Government net borrowing is much the most volatile of these other elements and is the source of most of the changes in differences between the private and total series. In general its effect has been to shift peaks and troughs into an earlier quarter, making total borrowing a slightly leading series at GNP turning points.¹¹ State and local governments have a hybrid position in the economy and hence in the social accounts—as

Figure 2.4 Borrowing, Capital Outlays, and GNP



governments the group is attributed no physical investment outlays in income and product data, but these units are nevertheless independent decision makers that base their financial planning on much the same market considerations as households and businesses and in this respect are part of the "private" segment of credit markets. Although borrowing by state and local governments is excluded from the private totals in Figures 2.2 through 2.5 that are related to physical investment, investment by them in financial assets is included with other private financial investment in later charts on supply of funds to credit markets.

Figures 2.6 and 2.7 indicate the cumulative effect on debt outstanding that has resulted from the structure of borrowing since 1952 that appears in preceding figures. Within a total debt owed by nonfinancial sectors that has risen only slightly in relation to GNP, there has been a major shift from public to private liabilities outstanding, with U.S. Government debt shrinking from 50 percent of the total in 1952 to 18 percent at the end of 1973.¹² The explanation for the shift lies in a combination of circumstances—the legacy still remaining from depression and war at the beginning of the period in the form of high public (and low private) debt, the strength of private investment demand stemming partly from the same cause and tending to generate private debt, and the favorable Government budget position that reflected strong private demand for goods and services.

The resulting trends in debt composition are strong but cannot be expected to continue indefinitely. Arithmetically, the ratio of debt outstanding to GNP trends, broadly, to approach an asymptotic level that is determined by a trend ratio of net borrowing to GNP. If, then, there is any stability over many years in the borrowing ratio to GNP, the growth rate in private debt can be expected to slow gradually as it approaches the limiting level set by borrowing rates. The slowdown in the private debt growth rate after 1965 is more marked than this

Figure 2.5 Total Nonfinancial Borrowing and Household Plus Business Borrowing

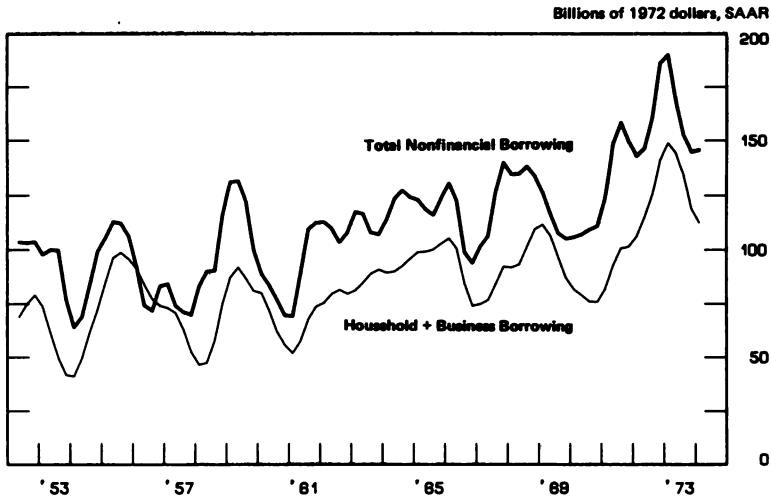
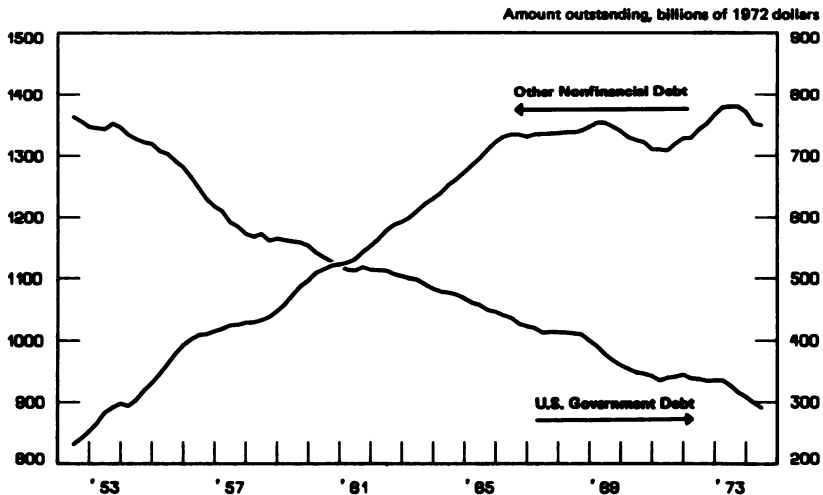
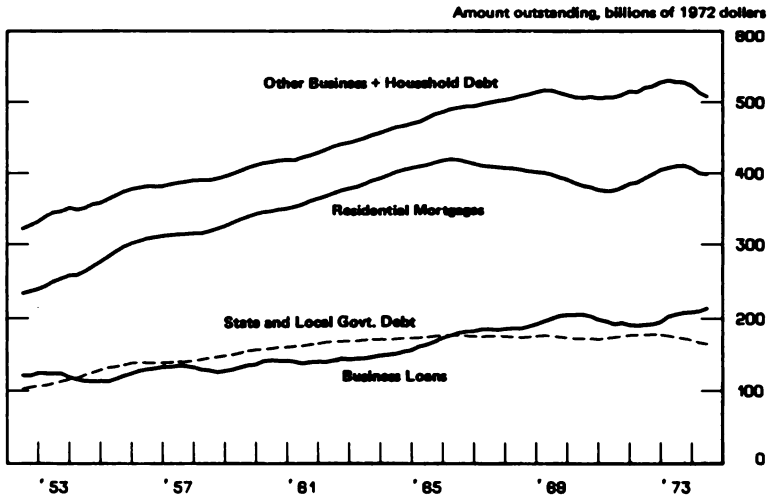


Figure 2.6 Debt Levels



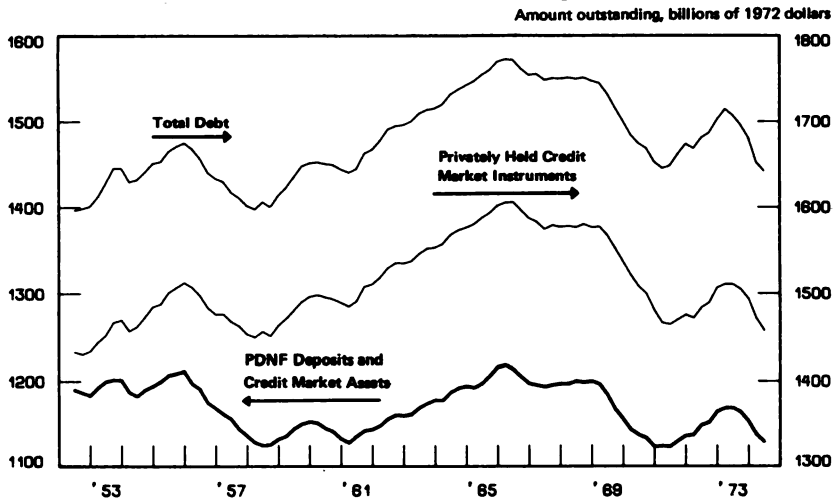
arithmetic would suggest, however, and indicates a change in environment from the earlier years. The increasing concern that has been expressed in recent years about the volume of private debt outstanding, particularly for certain types of marginal borrowers, and the increasing problems of financing in some markets are symptoms that postwar private borrowing rates may be higher than markets are prepared to accept indefinitely. The implication is that if capital formation is to be maintained at the general rates of roughly the past two decades, financing

Figure 2.7 Analysis of Private Debt

may have to shift away from the heavy reliance on debt that we have seen toward a larger use of either internal or external equity funds. The broad totals in the figures are only suggestive of this, however, and it might take another five years or more to extract such a shift in trend out of the volatile short-term data.

Figure 2.7 divides private debt into four major types, including state and local government securities. All of these forms were growing relative to GNP trends until the mid-1960s, but since then the growth has been predominantly in business debt, with a tendency toward larger cyclical swings away from trend than earlier. Both residential and state and local government debt appear to have reached a stability in relation to activity that they had not had before 1965.

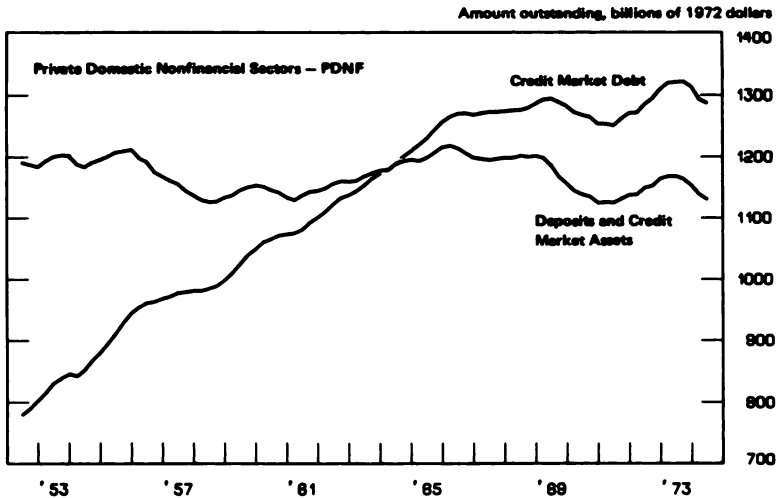
Figures 2.8 through 2.13 shift to the supply side of credit markets and summarize aspects of private nonfinancial sectors as lenders rather than as borrowers. As illustrated in Figure 2.1 and in Table 2.2, most of the total borrowing by nonfinancial sectors that appears in Figure 2.5 has a counterpart in financial asset accumulation by private domestic nonfinancial sectors, either directly through security purchases in markets, or indirectly through investment in deposits or other claims on intermediaries that are lending directly in markets. In amounts outstanding the relationship appears in Figure 2.8, where the top line is total debt of nonfinancial sectors—the sum of the two lines in Figure 2.6—the middle line is holdings of such debt by private domestic sectors including intermediaries, and the bottom line is deposits and security holdings by households, nonfinancial business, and state and local governments.¹³ In terms of the model Table 2.2, these are respectively item 5, items 8 plus 12, and item 14. The gap between total debt and the middle line consists of federally related and foreign direct holdings, and the 1971 increase in that gap reflects mainly the large increase that year in foreign official holdings of U.S. Government securities. The gap between

Figure 2.8 Total Debt and Financial Asset Holdings

the middle and bottom lines consists of net holdings by intermediaries financed by sources other than private domestic deposits and securities, mainly insurance and pension reserves, Federal and foreign deposits, and the equity funds of intermediaries. The changes over 1969–71 in that gap are mainly the buildup of foreign funds in commercial banks in 1969 and their subsequent runoff.

Figure 2.9 illustrates the marked shift over two decades in the position of financial assets and debt in the private economy. This shift combines the close relation in Figure 2.8 between private assets and total debt, both of which have had little trend over the past twenty years relative to activity, with the shift in Figure 2.6 from Federal to private debt outstanding.¹⁴ To an increasing extent since the late 1940s, the financial assets that private investors hold have come to be based directly or indirectly on claims owed by themselves rather than by others.

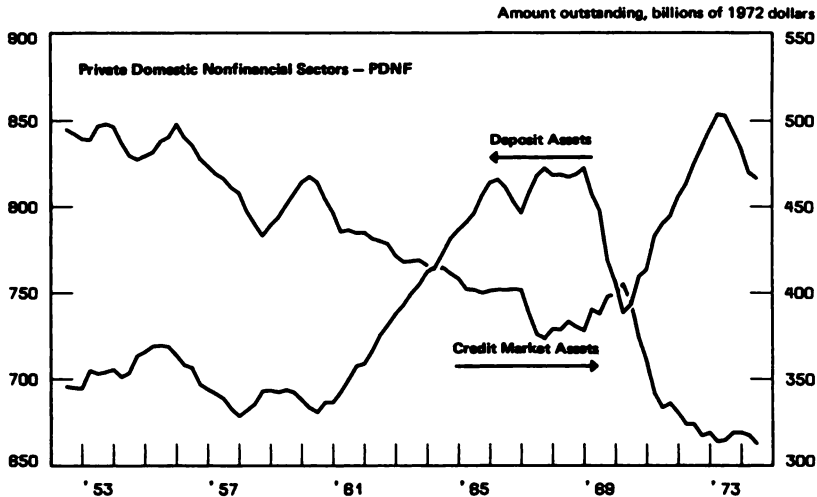
Paralleling this change in assets and debt structure has been a sizable increase in the degree of intermediation in financial markets. Private sectors as borrowers must look mainly to financial institutions for mortgages, consumer credit, and business loans, all of which are usually too specialized and too small in individual loan size to be broadly marketable; and even for their marketable debt, such as municipal and corporate bonds, the purchasers are heavily institutional. As their debts have grown, private sectors as lenders also have turned increasingly to institutional deposits as an investment alternative to the diminishing supply of Federal securities outstanding. Over the period covered in the figures, institutional holdings of credit instruments increased from 68 percent of the total held privately—the middle line of Figure 2.8—to 87 percent at the end of 1973. Most of this growth was financed by the shift in private investment away from direct market instruments and toward deposits in intermediaries, which increased from

Figure 2.9 Debt and Financial Assets in the Private Economy

59 percent of private portfolios—the bottom line of Figure 2.8—to 72 percent in 1973.

That shift in private investment is broadly indicated in Figure 2.10, which divides the private asset total in Figure 2.9 (and Figure 2.8) into deposit and credit instrument components. The two components have been rather more volatile over short-run periods than their total was, reflecting the sizable short-run changes over time in yield relationships between deposits and market instruments. Interest rates on most deposits have been much more stable cyclically than market rates, partly because of regulatory ceilings on deposit rates that have restrained those rates from following market rates upward in tight credit conditions. In the sequence of tight financial conditions covered by the chart—principally 1959, 1966, and 1969—high rates on market instruments attracted increasing amounts of funds out of institutions and into direct investment, partly because of increasing yield spreads and partly from increasing investor sensitivity to those spreads. Some of the deposit growth in the first half of the 1960s represented the development of large negotiable certificates of deposit by commercial banks, which introduced the CDs as money market instruments to attract funds from large investors such as major corporations, which had been holding liquidity mainly in Treasury bills. With the diminishing position of Treasury debt in the market, the CD became a major investment medium and an important conduit for transmitting liquidity holdings into bank credit for the growing volume of private debt.

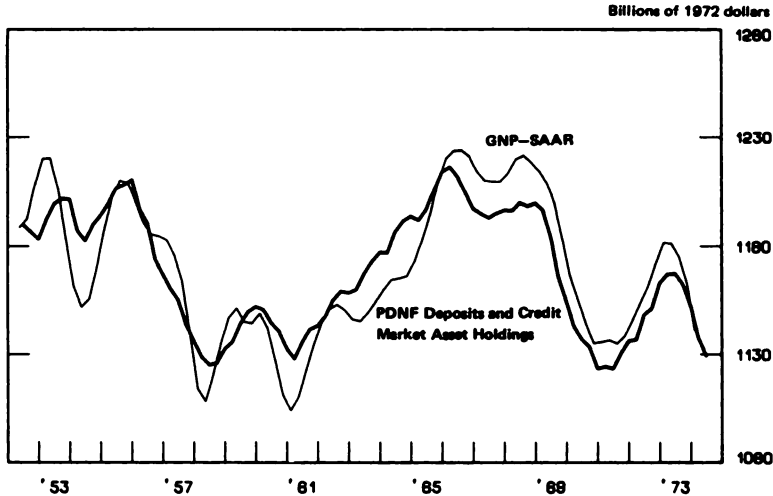
The effect of rate ceilings on deposits was most extreme in 1969, as Figure 2.10 indicates, when CDs in particular fell from \$23 billion at the beginning of the year to \$9 billion at year end (in actual dollars). Following that episode, ceilings were lifted on CD rates, and in the 1973 tight-credit period the effect of

Figure 2.10 Private Sector Deposit and Credit Market Assets

yield spreads was much more moderate than in 1969. As of 1973 the development of CDs as an open money market instrument, together with bank facilities for borrowing directly in commercial paper, Euro-currency, and bond markets, had done much to diversify the nature of bank intermediation and to diminish the significance of a distinction between deposit and direct market investments in financial market analysis.

The nature of deposits was also changed by the introduction of consumer-type CDs by both banks and savings institutions. These are nonnegotiable deposits with specified maturity dates that can be withdrawn before maturity only at a substantial cost in yield. By the end of 1973 almost half of savings institution deposits were of this dated form, and the penalties of converting these to market instruments have reduced further the sensitivity of deposit flows to market instruments. At the end of the period covered by the chart, therefore, deposit-security relationships in private portfolios had become more complex than in earlier years, both in their connection to yield structures and in their meaning for the extent of intermediation.

Figure 2.11 combines again the deposits and credit instruments from Figure 2.10 to compare the total holding—the same total that is in Figure 2.8 and Figure 2.9—with GNP. In spite of the shifts in composition of total assets, the relationship to GNP is unusually close over most of the figure in both movement and—in what is presumably only a coincidence—absolute value. The asset total tends to have somewhat smaller cyclical movements than GNP, and after 1965, when private debt growth started to slow, assets have been slightly lower relative to GNP than in earlier years. These differences are small compared to the total relation, however, and within the span of years covered no significant drifts in trend are apparent. The relation is closer than that between GNP and debt totals,

Figure 2.11 Private Holdings of Financial Assets and the GNP

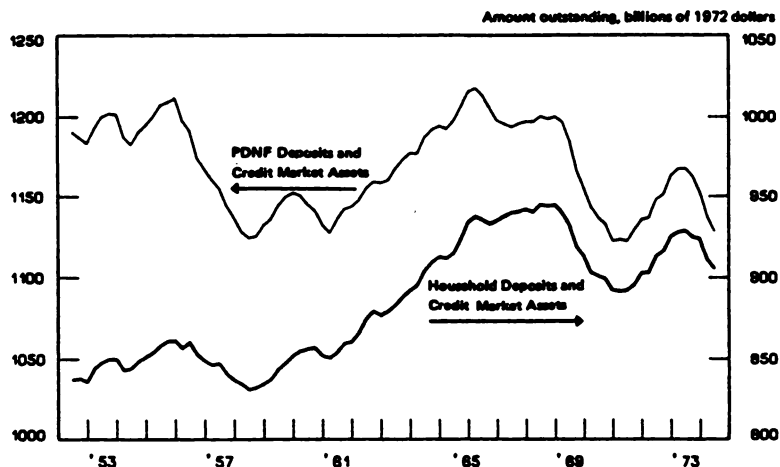
with the differences absorbed in connective elements of credit supply, such as Government, foreign, and miscellaneous intermediary sources of supply, that constitute the gaps between the three lines in Figure 2.8.

This connection between private financial assets and activity is, like the rest of the material in the figures, an empirical "black box" in that it neither supports nor is explained by any broadly accepted analytical system. Without analytic support there is no basis for predicting that it will or will not continue into other economic circumstances such as chronically higher inflation rates or slower economic growth rates. The persistence of the relation on a quarterly basis nevertheless suggests a relation between activity and financial structure that may be a macroeconomic constraint of importance both to forecasting and to policy.

Figure 2.12 breaks out the household component of private assets to illustrate that within the total there has been drift in sector distribution of holdings. Over the period of the figure the household share increased from 71 percent of the total to 80 percent, with an offsetting decrease, from 21 to 12 percent, in holdings by nonfinancial business—mainly business liquid assets. State and local government holdings stayed at about 8 percent of the total over the period, even with the steadily rising importance of these governments in total activity. Statistically, the total is more reliable than its parts, particularly the distribution between household and business assets, and the shift may be weaker than source data suggest. For corporations, however, a drop in liquid asset position from the early 1950s is fairly well supported, and there is little question that over twenty years they have held diminishing amounts of a total that has stayed almost constant relative to GNP.

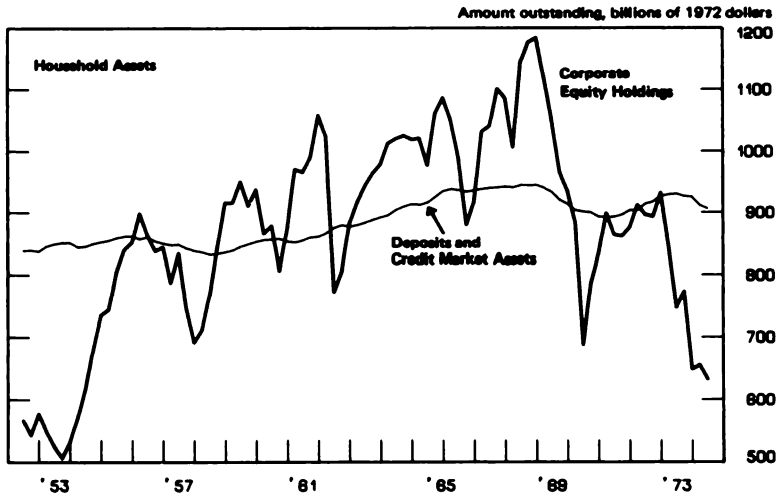
Figure 2.13, finally, introduces corporate equity holdings to the picture. The preceding figures have focused on debt instruments, both as liabilities and as

Figure 2.12 Total Private and Household Holdings of Financial Assets



assets, and it is for this total of claims that the relationships have appeared. Equities have a separate position in the financial system in that as liabilities they are only residual claims and, in a legal sense at least, are not burdens on issuers. In the flow tables net new stock issues appear as external sources of funds to business and as net financial uses of funds by investors. In tables on outstanding assets and liabilities, however, they appear only as assets valued by market prices, and no specific liability for them is attributed to issuers. While corporate equity net flows are a small component of household financial investment, holdings valued at market are a major part of household assets, as large as all deposits and debt securities over the general period of the figure. Figure 2.13 shows that such holdings, because they reflect movements in stock market prices, are also far more volatile in amount than other financial assets. There is a mild correlation over the period between the two quantities, a correlation that is obscured by the compressed vertical scale of Figure 2.13 that is needed to cover stock value movements. In the deflated dollars of the figure equity values have moved by roughly \$7 for each \$1 change in holdings of deposits and credit instruments, neglecting the many short-term perturbations in the equity series and some irregularities in the timing of movements. There may be interaction between the two totals that is exaggerated for equity values because of the lack of net flows of new issues, but to some extent both series are probably also responding in parallel to other conditions in the economy.

The shift in credit structure from directly held central government debt to intermediated private debt, which is a dominant feature of the charts, is put into another perspective in Table 2.3. This table pulls together, again in detrended and deflated dollars, a set of claims on the U.S. Government and closely related institutions as a proxy for a total of basic reserve assets that are available for private investment, and it indicates the changes in holdings of these assets over

Figure 2.13 Household Holdings of Credit Market Assets and Corporate Equity

the twenty years shown in the charts. The set of claims is broader than Government debt in Figure 2.6 in that it includes reserve money and also the debt of federally sponsored credit agencies, which have played a greatly expanded role in recent years as Government-related intermediaries, lending housing and farm credit on the basis of public issues of their own debt.¹⁵

The total of these reserve assets, although sharply diminished from earlier years, continued to be held in roughly equal parts by financial institutions and private nonfinancial investors, with a small third component held abroad. Nonfinancial sectors have offset their drop in official claims through an increase in deposits at institutions (line 12 of the table) of a nearly equal amount, and the total of the two types of assets was virtually unchanged over twenty years. These claims also constituted most of their total deposits and securities (line 13) during the period. For financial institutions, the substitution was of a quite different type, namely the buildup of private loans and securities that constituted most of the growth in private debt that appears in Figure 2.6 and Figure 2.9. By the end of the period private finance was thus playing an increasingly central role in intermediating between nonfinancial sectors as investors and between the same sectors as borrowers, with central government much diminished as a source of safe or liquid claims for either group.

One of the effects of this increasing exposure of private finance in credit markets has been the burgeoning of the federally sponsored credit agencies mentioned earlier. Although operating in specialized credit markets—mainly housing and farm credit—their component of the Government debt on line 5 of Table 2.3 grew from \$7 billion in 1952 to \$60 billion at the end of 1973 (in the

Table 2.3

Private Claims on U.S. Government Institutions (amounts outstanding at year-end in billions of 1972 dollars, trend removed)

Item		1952	1960	1973
1.	Total claims, by type	<u>844</u>	<u>586</u>	<u>384</u>
2.	Currency in circulation	103	73	63
3.	Member bank reserves	68	38	24
4.	Foreign deposits at F.R. Banks	2	*	*
5.	U.S. Govt securities held outside F.R. System	671	475	297
6.	Holdings, by sector group	<u>844</u>	<u>586</u>	<u>384</u>
7.	Financial business	417	265	159
8.	Foreign (including official)	16	24	48
9.	Private domestic nonfinancial	<u>412</u>	<u>296</u>	<u>177</u>
10.	Currency outside banks ¹	94	65	54
11.	U.S. Govt. securities	318	231	123
12.	Memo: Private domestic nonfinancial sector deposits at financial institutions	601	621	780
13.	Total private money, deposits, and credit instruments	1,183	1,133	1,153
14.	Financial business total holdings of reserves and credit instruments	1,050	1,142	1,333

* Less than \$500 million.

¹ Includes unknown amounts held by other sectors, mainly foreign.

Note.--Details may not add to totals because of rounding. Values of deflator appear in Notes to charts (page 26).

deflated dollars of the table) to finance an almost equal increase in their holdings of private credit. If private debt continues in the future to push up relative to activity, these agencies will probably absorb a rapidly increasing share of the total growth with support from a variety of Government guarantee programs for private credit. Direct lending and loan guarantee operations by the Government have focused on particular kinds of credit that have been in difficulty and are seen mainly as a method by which the Government can help those specific loan markets to compete against other kinds of demand. While the agencies appear sometimes to be "draining" loanable funds from private markets and creating credit tightness that wouldn't otherwise exist, it is important to see also their function in supplying to the economy an investment and liquidity instrument—in the form of their own debt—of a kind that is becoming increasingly scarce.

This review of the historical data has not tried to explain analytically the cycles and trends of postwar financial developments or to point up trends with alarm. Its purpose has been rather to illustrate certain main connections within the flow-of-funds accounts among lending, borrowing, balance sheet positions, and nonfinancial activities—connections that are close over the period covered and that are basic data for analysis of the economy as a whole. Some of the

connections have shown tendencies to shift over the twenty years. The 1960s in particular have demonstrated the facility and speed of financial markets in adapting to new practices and new financial instruments. These changes in financial flow structure usually appear in individual markets or sectors and can be explained to some extent by detailed analysis of those markets or sectors. They occur within the frame of the whole, however, and are in part reactions to changes in that frame. Whether as a framework that constrains particular markets or as elements acting on one another within a system, however, the main members of the structure appear to have an empirical existence that should be recognized explicitly in the data and in analysis of the data.

Table 2.4

Notes to Figures in Reading 2

All data in Figures 2.2 through 2.13 have been deflated by a single compound index (1972 = 100) that is the product of (1) the U.S. noninstitutional population 16 years of age and over, (2) the GNP price deflator, and (3) an exponential growth trend in deflated GNP per capita found by least-squares regression to be 2.2 percent per year for the period 1952-73. After deflation, all flow data are plotted as centered two-quarter moving averages (three quarters weighted 1-2-1), with 1/52 omitted from the figures. Assets and liabilities outstanding are deflated by the same index, but before deflation the data on levels outstanding were processed to eliminate the many discontinuities that occur in time series on levels outstanding because of changes in coverage in basic statistical sources. To make the levels continuous, the 1973 year-end levels were taken as a base and incremented back to 1/52 by the seasonally adjusted quarterly flows. Corporate stocks are omitted from all data in the figures both as assets and as liabilities except in Figure 2.13.

Data for the figures are derived from published flow-of-funds tables and are identified in the following list:

Figure	Item	Table*	Line
1	Net change in inventories	S.10	9, upper section
	Business loans	S.10	18 + 19, upper section
2	Private net fixed investment	S.5	3, lower section less inventories in Figure 2.2
	Households + business borrowing except business loans	S.5	26 + 27, upper section less business loans in Figure 2.2
3	Private net capital outlays	S.4	3, lower section
	Households + business borrowing	S.4	26 + 27, upper section
4	Total nonfinancial borrowing	S.4	1, upper section
	Households + business borrowing	S.4	From Figure 2.4
5	U.S. Government debt	S.6	2
	Other nonfinancial debt	S.6	5
6	Business loans	S.10	13 + 14, lower section
	Residential mortgages	S.6	10 + 11
	Other business + household debt	S.6	22 + 23 less business loans and residential mortgages
	State & local government debt	S.6	21
7	Total debt	S.6 & S.7	1, total credit market debt owed by nonfinancial sectors
	Privately held credit market instruments	S.7	12
	Private domestic nonfinancial sector deposits and credit market assets	S.7	46, credit instruments, deposits, and currency
8	Deposits and credit market assets	S.7	46
	Credit market debt	S.6	21 + 22 + 23
9	Deposit assets	S.7	38
	Credit market assets	S.7	32
10	GNP	Not included	
	PDNF deposits and credit market asset holdings	S.7	46
11	PDNF deposits and credit market assets	S.7	46
	Household deposits and credit market assets	S.9	2
12	Deposits and credit market assets	S.9	2
	Corporate equity holdings	S.9	17 (at market value)

Fourth-quarter values of the deflator are presented below in reciprocal form, as multipliers against actual data:

1952	3.388	1956	2.762	1959	2.329	1962	2.013	1965	1.706	1968	1.369	1971	1.051
1953	2.278	1957	2.587	1960	2.206	1963	1.905	1966	1.591	1969	1.247	1972	.973
1954	3.127	1958	2.450	1961	2.113	1964	1.801	1967	1.482	1970	1.135	1973	.871
1955	2.970												

*These tables correspond to pages in "Flow of Funds--1974 Supplement" as follows: S.4--page 2, S.5--page 3, S.6--page 27, S.7--page 28, S.9--page 29, S.10--pages 5 and 30.

Notes

1. The note to Table 2.1 is important for working out the relation between the general description in this section and the more complex form that financial activity takes in the actual economy.

2. Although they are combined, by statistical necessity, with similar transactions of many other individuals.

3. As of this publication, the accounts on outstandings are incomplete as balance sheets in that they exclude physical assets and therefore exclude any measure of net worth; as the problems of valuation and data are worked out in this area, it will be possible to complete the balance sheets at some time in the intermediate future.

4. A review of depository intermediation in recent years appears in "Time Deposits and Financial Flows," Federal Reserve *Bulletin* (December 1966): 1739–52.

5. Notes to Table 2.1 list several types of financial claims that have been omitted from the model matrix for simplification, such as trade credit and taxes payable. These omitted forms are not part of organized credit markets and are also omitted from the full form of Table 2.2. Types of credit included in the Table 2.2 total are listed in the full version.

6. Line 15 is not included in the full form of the table.

7. Saving in the diagram is the total for private sectors, including intermediaries. Intermediary saving is an internal source of funds for lending in the diagram.

8. Intermediaries use their own retained incomes (5) to lend somewhat more than they borrow.

9. Investment appears in Figure 2.3 and Figure 2.4 net of depreciation charges, which are measured primarily on a historical-cost basis. The investment is thus the amount that in conventional accounting would appear to require financing from external funds or from net saving of the investor.

10. A common practice in current analysis is to measure either investment or net borrowing as a percentage of GNP. The relationship illustrated in the figure—that is, roughly equivalent amplitudes on very different base levels—produces volatile percentage movements relative to GNP that have some usefulness as sensitive indicators of cyclical movements. The figure suggests, however, that the movements in percentages are somewhat beside the point and that comparisons of absolute movements indicate more directly regular and irregular cyclical developments.

11. Turning-point relationships among series are affected by the deflation of the data that was described earlier. With undeflated data, the leading characteristic of total borrowing is more pronounced, because adding growth trends to the data shifts peaks in GNP farther into later quarters than peaks in borrowing. The reason is that GNP is a proportionately more stable quantity than net credit flows and has a relatively larger trend component.

12. Deflating flows and levels by a single index of growth and prices for the figures creates a special relation between the deflated figures for net borrowing and changes in debt outstanding. If the deflator increases 5 percent a year, borrowing must equal 5 percent of outstanding debt merely to keep deflated debt constant. A borrowing rate of more than 5 percent will raise the debt level, but if less than 5 percent, deflated debt goes down even with positive borrowing. In the data used for the figures, average growth in the deflator was 6.7 percent per year, 1952 to 1973, whereas U.S. Government debt was growing in absolute terms at a 2.3 percent rate that by deflation was converted to a 4.1 percent rate of decrease. Private debt, on the other hand, was growing at a 9.1 percent annual rate, well above the deflator. These data exclude corporate equity issues from both debt and borrowing.

13. Insurance and pension reserves appear as assets of households in the total accounting structure and on that basis could be included in the bottom line as assets of the nonfinancial group. Such reserves are, however, more remote from day-to-day investment decisions of households than their deposit and security portfolios and on that basis are set aside in summary tables and in these charts as a separate financial relationship in the system.

14. The small foreign debt component in Figure 2.6 is omitted from the debt total in Figure 2.9.

15. The total is also a little narrower than in Figure 2.6 in that it omits Government debt held by the Federal Reserve.

**BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM**

**Overview, Organization, and Uses of
the Present U.S. Accounts**

(1993)

Overview of the Accounts

The flow-of-funds accounts perform several functions. They measure the acquisition of physical and financial assets throughout the U.S. economy and the sources of funds used to acquire the assets. In doing this, the accounts record the net volume of transactions in financial instruments; provide a means of analyzing the development of the instruments and the behavior of sectors over time; and record the role of financial intermediaries, such as banks and pension funds, in transferring funds from sectors having positive saving to those that borrow funds. The accounts also provide a broadly consistent set of time-series data for financial flows in the economy. The time series in the accounts are consistent not only within the flow-of-funds system but also with the national income and product accounts (NIPA) compiled and published by the Bureau of Economic Analysis (BEA) in the U.S. Department of Commerce.

In showing the relationship of various financial activities to each other and to nonfinancial activities that generate income and production, the flow-of-funds accounts provide a broad measure of investment activities. In theory, the accounts encompass all net changes in financial claims or liabilities resulting from (1) current transactions in the economy, (2) the allocation of saving between investment in physical capital and investment in financial capital, and (3) decisions to change the composition of financial assets and liabilities. Thus the

Reprinted from Board of Governors of the Federal Reserve System, *Guide to the Flow-of-Funds Accounts* (Washington, DC: Board of Governors of the Federal Reserve System, 1993): 7–26.

scope of the flow-of-funds accounts is broader than that of the NIPA, which focus on activity related to current production and income. For example, unlike the NIPA, the flow-of-funds accounts include financial flows among the various sectors of the economy that arise from transfers of existing physical assets, as well as shifts in the composition of financial portfolios that may be unrelated to, or only indirectly related to, current production.

The flow-of-funds accounts are published as the Z.1 statistical release of the Federal Reserve Board, a component of a system of economic accounts that describe the U.S. economy. The other components of the system are the NIPA and the balance of payments accounts, also published by BEA, which measure production and income activity and international capital flows during a particular time period. The flow-of-funds accounts and the related "Balance Sheets for the U.S. Economy" (the Federal Reserve Board's C.9 statistical release) detail how current investment in tangible and financial assets contributes to a buildup of the stock of assets for each sector of the economy and to the creation of national wealth. The flow-of-funds accounts can be viewed as combining data on the flows of saving and tangible investment published in the NIPA with additional details on borrowing and lending for specific economic sectors.

The NIPA, flow-of-funds accounts, balance of payments accounts, and balance sheets, taken as a coordinated system of economic accounts, are similar to the international standard specified in the United Nations' System of National Accounts (SNA).¹ The SNA framework is an integrated set of economic accounts that estimate beginning-of-period balance sheets, current production and income-distribution activity, tangible and financial investment, revaluation of assets and the volume of transactions in them, and end-of-period balance sheets. The flow-of-funds accounts are conceptually equivalent to the tangible and financial investment accounts specified in the SNA, and the U.S. balance sheets are similar to those envisioned for the SNA.

Differences in presentation exist, however, between the SNA and the flow-of-funds accounts. In the proposed SNA, tangible and financial investment activity is split into a capital account and a financial account; in contrast, the flow-of-funds accounts integrate both types of activity into a single account in a sources and uses framework. The integrated presentation aids analysis by making explicit the trade-off between tangible and financial investment, the funding strategies used to support investment, and the overall financial structure and economic health of specific sectors. The proposed SNA framework also suggests separate accounts for revaluations of assets and for changes in assets resulting from other factors, whereas the flow-of-funds accounts do not isolate revaluations and volume changes to the extent that the SNA envisions. Although the U.S. balance sheets make many adjustments for revaluations and volume changes, they do not present them in a specific statement, as the SNA proposes.

The accuracy and timeliness of the flow-of-funds accounts depend on the availability of outside statistical information. The data in the accounts are drawn

from a large number of reports and publications from private and public sources. Information on some groups of institutions and some types of financial transactions is available only annually or with a long lag, and in many cases data on asset or liability categories are not reported in sufficient detail to meet the requirements of the accounts. In both cases, staff members of the Federal Reserve estimate the value of individual items, using techniques that are reviewed regularly. Staff members also make benchmark revisions once a year, usually in September, to incorporate new data and to make structural changes to the accounts.

Basic Principle Underlining the Accounts

The flow-of-funds accounts are constructed on the basic principle that all movements of funds in the economy must be accounted for, because total sources of funds equal total uses of funds: Saving equals investment in the economy, and all uses of funds by sectors in the economy become sources of funds by other sectors, even if a particular use is only the hoarding of currency. This basic principle—that total sources of funds and total uses of funds in the economy are equal—becomes a requirement when the accounts are calculated.

The sources of funds for a sector are its saving out of current income and the amounts it raises from outside the sector. Gross saving is equal to receipts of current income less outlays for consumption, operating expenses, interest, and other current expenses. Funds raised from outside sources constitute the sector's net increase in liabilities.

The uses of funds for a sector are its investments in physical assets and net increases in financial assets, such as deposits, loans, and securities.

The requirement that sources of funds must equal uses of funds applies not only to sectors but also to individual types of transactions—total funds borrowed through each type of financial instrument must equal total funds lent through that type of instrument. For the economy as a whole, funds borrowed by all sectors must equal funds lent by all sectors, and funds borrowed through all types of financial instruments must equal funds lent through all types of financial instruments.

These equalities in the flow-of-funds accounts exist in principle but do not necessarily emerge from the available items of statistical information, which are not always complete or consistent with each other. The equalities are achieved in the calculation of the accounts by using residuals to balance the totals. In some cases, a particular sector is made the residual borrower or lender of a financial transaction item, or a particular type of transaction is made the residual borrowing or lending item for a sector; in other cases, a specific sector or transaction discrepancy item is calculated as the residual. The total of sector discrepancies in the accounts equals the total of transaction discrepancies.

In the flow-of-funds Z.1 statistical release, each line in a sector flow table represents a source or use of funds; data are shown for several periods. Data in each table for a sector meet the constraint discussed above that, for each period,

total sources of funds must equal total uses of funds. Also, data in the flow tables for each sector fulfill the macroeconomic requirement that gross saving equal gross investment. Both of these equalities are achieved by calculating the residuals. For most sectors, the residual item is the sector discrepancy. For the farm business and nonfarm noncorporate business sectors, the residual item is "proprietors' net investment," which reflects changes in the value of ownership of the sector by the household sector.

The example in Table 3.1 indicates the structure of a typical flow-of-funds sector table and helps clarify the relationship between sources and uses. Lines 1 and 2 show gross saving and gross investment. Investment is separated into its two major forms, capital expenditures (line a) and net financial investment (line b). Net financial investment, in turn, is calculated as net acquisition of financial assets (line i) less the net increase in liabilities (line ii). The discrepancy between gross saving and gross investment, arising from imperfections in the sources of the data, is given in line 3.

The basic constraint that each sector's saving equal its investment is given by equation 1 in the lower portion of the box. Expanding equation 1 into equations 2 and 3, and then regrouping to form equation 4, shows how the equality between sources and uses of funds is equivalent to the equality between gross saving and gross investment. The discrepancy is arbitrarily treated as a use of funds in the flow-of-funds accounts.

Matrix Format

The Z.1 statistical release uses a time-series format for presenting the flow-of-funds accounts. An alternative format is a matrix consisting of columns and rows, with one matrix for each time period. Table 3.2 is a detailed flow-of-funds matrix showing data that appear in the sector and transaction tables in Z.1. For each sector, the matrix contains one column for sources of funds and one column for uses, and the two columns must separately sum to the same total. For each transaction category, the total of sources must equal the total of uses across a row; some rows contain balancing transaction discrepancies. Presenting the accounts in matrix form highlights the fact that, for financial transactions, one sector's sources of funds are other sectors' uses, and vice versa. The total of amounts shown in all the source or use columns must equal the total of amounts shown in all the rows.

Table 3.3 is a simplified form of Table 3.2, condensed in order to highlight the matrix's major features. The twenty-seven sectors in the accounts are aggregated in this table into four groups, listed across the top of the table. Down the left side of the table are the transaction categories, here compressed into seven rows plus a row for the column totals. In Table 3.3 gross saving and capital expenditures, the nonfinancial sources and uses of funds, appear in lines 1 and 3, respectively. All the financial transactions of a sector are summarized as net

Table 3.1

Structure of a Typical Sector Table in the Flow-of-Funds Accounts

1. Gross saving (GS)
2. Gross investment (GI)
 - a. Capital expenditures (CE)
 - b. Net financial investment (NFI)
 - i. Net acquisition of financial assets (NAFA)
 - ii. Net increase in liabilities (NIL)
3. Discrepancy (D)

$$\begin{array}{llll}
 (1) & GS & = & GI + D \\
 (2) & GS & = & (CE + NFI) + D \\
 (3) & GS & = & CE + (NAFA - NIL) + D \\
 (4) & GS + NIL & = & CE + NAFA + D \\
 & \text{(Sources of funds)} & = & \text{(Uses of funds)}
 \end{array}$$

financial investment (line 4)—the excess of a sector's lending to other sectors (its financial uses) over its borrowing from other sectors (its financial sources). Each sector's net financial investment equals the excess of its saving over its capital expenditures (apart from the sector discrepancy).

The matrix framework is useful in analyzing actual or hypothetical economic events. An example is the change in U.S. tax law in 1986 that gradually removed the tax-deductibility of interest payments on consumer loans. One consequence of this action was a shift in borrowing by individuals from consumer credit to home equity loans, which are included in the home mortgage category. An analyst examining this event when it first occurred might use the flow-of-funds matrix to predict the likely effects of the change on financial flows in different areas of the economy.

For example, if a shift to home mortgage borrowing from consumer credit were to be made by the household sector with no other change in consumer behavior, the sector would still be in balance in the matrix because the change would constitute only a switch from one source of funds to another, leaving total sources for the sector unchanged. The transaction categories, adding across the columns along the consumer credit row, would now be out of balance, however, because total uses of funds for consumer credit, the change in the assets of the lending sectors, would be greater than total sources, the change in borrowings. The opposite would be true for the home mortgage category. The analyst would note that, to keep all the rows in balance, home mortgage lending would have to increase for some sectors and consumer credit lending decrease for others.

The changes would now create an imbalance between total sources and uses

Table 3.2

Detailed Flow-of-Funds Matrix, 1991 (billions of dollars)

Item	Private domestic nonfinancial sectors								Foreign sector	
	Households ²		Business ³		State and local governments ⁴		Total			
	U	S	U	S	U	S	U	S	U	S
1. Gross saving	...	849.6	...	541.3	...	-39.6	...	1,351.3	...	-8.9
2. Capital consumption	...	526.0	...	461.6	...	...	...	987.7	...	...
3. Net saving (1-2 ⁵)	...	323.6	...	79.7	...	-39.6	...	363.6	...	-8.9
4. Gross investment (5+11)	865.2	...	525.2	...	-40.9	...	1,349.5	...	4.8	...
5. Capital expenditures	655.6	...	452.2	...	...	...	1,107.8	...	...	...
6. Consumer durable goods	446.1	...	...	...	...	...	446.1	...	...	...
7. Residential construction	172.2	...	17.9	...	...	...	190.1	...	...	...
8. Plant and equipment	37.4	...	441.7	...	...	...	479.1	...	...	...
9. Inventory change	...	...	-10.2	...	...	...	-10.2	...	...	...
10. Mineral rights ⁶	...	...	2.8	...	...	...	2.8	...	...	...
11. Net financial investment	209.6	...	73.0	...	-40.9	...	241.7	...	4.8	...
12. Financial uses	388.1	...	76.0	...	-1.2	...	462.9	...	50.5	...
13. Financial sources	...	178.5	...	3.0	...	39.7	...	221.2	...	45.7
14. Gold & official foreign exchange	...	...	...	...	...	...	...	...	-2	-5.9
15. Treasury currency and SDR certificates ⁷	...	...	...	...	...	...	...	...	...	...
16. Checkable deposits and currency	50.8	...	11.6	...	5.1	...	67.4	...	-1.4	...
17. U.S. government	...	...	...	...	...	...	...	...	...	...
18. Foreign	...	...	...	...	...	...	...	...	-1.4	...
19. Private domestic	50.8	...	11.6	...	5.1	...	67.4	...	...	...
20. Small time and savings deposits	10.0	...	...	...	5.8	...	15.8	...	...	...
21. Money market fund shares	28.6	...	5.2	...	...	...	33.8	...	...	...
22. Large time deposits	-71.8	...	3.2	...	-13.3	...	-81.9	...	-5	...
23. Federal funds and security RPs ⁸	...	...	-3.8	...	-14.9	...	-18.7	...	*	...
24. Foreign deposits	...	...	6.9	...	...	...	6.9	...	...	1.5
25. Life insurance reserves	22.0	...	...	...	...	...	22.0	...	...	...
26. Pension fund reserves	268.1	...	...	...	...	...	268.1	...	...	...
27. Interbank claims	...	...	...	...	...	...	...	...	-18.5	...
28. Mutual fund shares	129.2	...	2.7	...	...	...	131.9	...	...	...
29. Corporate equities	-68.7	...	...	18.3	...	...	-68.7	18.3	10.1	30.2
30. Credit market instruments	-14.1	158.0	19.3	-22.3	16.3	38.5	21.4	174.3	44.7	14.1
31. U.S. Treasury securities	-64.8	...	20.3	...	-2.0	...	-46.5	...	32.1	...
32. Federal agency securities	-10.4	...	1.6	...	14.4	...	5.5	...	10.1	...
33. Tax-exempt securities	21.9	8.8	1.8	-1.2	.5	38.2	24.3	45.8	...	...
34. Corporate and foreign bonds	42.9	...	...	78.6	...	...	42.9	78.6	18.4	14.9
35. Mortgages	18.7	147.6	-3.2	-17.6	3.4	...	18.8	130.0	...	...
36. Consumer credit	...	-12.5	-.8	...	...	...	-.8	-12.5	...	...
37. Bank loans n.e.c. ⁹	...	4.1	...	-37.5	...	...	...	-33.4	...	3.1
38. Open market paper	-22.5	...	-.4	-18.4	...	...	-22.9	-18.4	.6	6.4
39. Other loans	...	10.1	...	-26.3	...	.4	...	-15.8	-16.5	-10.2
40. Security credit	24.6	16.3	...	...	...	...	24.6	16.3	.0	.0
41. Trade credit	...	2.5	-6.0	12.2	...	1.1	-6.0	15.9	1.0	5.3
42. Taxes payable	...	...	...	-9.6	...	-1	...	-9.6	...	...
43. Equity in noncorporate business	-1.3	...	...	-11.4	...	...	-1.3	-11.4	...	...
44. Miscellaneous	10.8	1.7	37.0	15.8	...	...	47.8	17.6	15.2	.6
45. Sector discrepancies (1-4)	-15.6	...	16.1	...	1.3	...	1.8	...	-13.7	...

1. In the column heads, U, use; S, source.
2. Includes personal trusts and nonprofit organizations.
3. Farm, nonfarm noncorporate, and nonfarm nonfinancial corporate.

4. State and local government general funds. (State and local government employee retirement funds are included with private nonbank finance.)
5. Numbers in parentheses refer to numbered lines.

U.S government		Financial sectors										All sectors		Transaction discrepancies	National saving and investment	
		Total		Sponsored agencies and mortgage pools		Monetary authority		Commercial banking		Private nonbank finance						
U	S	U	S	U	S	U	S	U	S	U	S	U	S	U		
...	-236.0	...	39.0	...	5.1	...	-1.8	...	43.2	...	-7.5	...	1,145.4	...	1,154.3	1.
...	...	...	42.9	...	3.1	...	.1	...	23.3	...	16.4	...	1,030.6	...	1,030.6	2.
...	-236.0	...	-3.9	...	2.1	...	-1.9	...	20.0	...	-24.0	...	114.8	...	123.8	3.
-266.6	...	53.7	...	6.2	...	.2	...	24.1	...	23.2	...	1,141.3	...	4.0	1,162.5	4.
-2.8	...	62.2	...	4.0	...	.2	...	33.7	...	24.3	...	1,167.2	...	-21.9	1,167.2	5.
...	...	...	...	...	...	...	...	...	...	...	...	446.1	...	...	446.1	6.
...	...	.2	...	...	...	...	...	...	...	.2	...	190.3	...	...	190.3	7.
...	...	62.0	...	4.0	...	.2	...	33.7	...	24.1	...	541.1	...	...	541.1	8.
...	...	...	...	...	...	...	...	...	...	...	...	-10.2	...	...	-10.2	9.
-2.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10.
-263.8	...	-8.5	...	2.2	...	.0	...	-9.6	...	-1.1	...	-25.9	...	25.9	-4.8	11.
49.6	...	765.1	...	157.7	...	22.3	...	106.0	...	479.1	...	1,328.1	...	25.9	45.7	12.
...	313.4	...	773.6	...	155.5	...	22.3	...	115.6	...	480.2	...	1,354.0	...	50.5	13.
-2.6	...	-3.2	...	...	...	-3.2	...	...	...	...	...	-5.9	-5.9	...	...	14.
...	*	.7	...	...	...	.7	...	...	...	...	...	.7	*	-6	...	15.
27.4	...	-6.6	75.8	-7	...	...	29.2	-8	37.8	-5.2	8.7	86.8	75.8	-11.1	...	16.
27.4	...	...	14.3	...	...	...	8.8	...	5.5	...	...	27.4	14.3	-13.1	...	17.
...	...	...	-1.4	...	...	...	.6	...	-2.0	...	...	-1.4	-1.4	...	...	18.
...	...	-6.6	62.8	-7	...	...	19.8	-8	34.3	-5.2	8.7	60.8	62.8	2.0	...	19.
.1	...	.7	16.7	...	...	...	...	...	80.0	.7	-63.2	16.7	16.7	...	...	20.
...	...	7.5	41.3	...	...	...	...	...	...	7.5	41.3	41.3	41.3	...	...	21.
...	...	21.6	-60.9	...	...	...	...	...	-23.1	21.6	-37.8	-60.9	-60.9	...	...	22.
...	...	-7.3	-16.4	-1.1	...	-2.5	...	...	-19.3	-3.8	2.9	-26.0	-16.4	9.7	...	23.
...	...	-5.4	...	...	...	...	...	...	...	-5.4	...	1.5	1.5	...	...	24.
...	.1	...	21.9	...	...	...	...	...	...	...	21.9	22.0	22.0	...	...	25.
...	25.5	...	242.6	...	...	...	...	...	...	...	242.6	268.1	268.1	...	...	26.
...	...	-9.7	-2.1	...	...	-1.5	-8.2	-7.8	6.2	-5	...	-28.2	-2.1	26.2	...	27.
...	...	18.6	150.5	...	...	...	...	1.8	...	16.7	150.5	150.5	150.5	...	...	28.
...	...	106.9	...	...	...	...	...	2.3	.9	104.6	-1.0	48.3	48.3	...	...	29.
10.0	278.2	529.7	139.2	152.8	147.7	31.1	...	84.0	-15.8	261.8	7.3	605.8	605.8	...	...	30.
...	292.0	306.5	...	16.5	...	31.4	...	60.5	...	198.1	...	292.0	292.0	...	...	31.
.0	-13.8	118.3	147.8	6.1	147.8	-3	...	50.8	...	61.7	...	134.0	134.0	...	...	32.
...	...	21.5	...	...	...	...	...	-14.2	...	35.7	...	45.8	45.8	...	...	33.
...	...	89.8	57.7	...	...	...	...	7.3	4.2	82.5	53.5	151.2	151.2	...	...	34.
15.4	.0	96.4	.6	155.3	...	...	...	32.4	...	-91.4	.6	130.6	130.6	...	...	35.
...	...	-11.8	...	...	...	...	...	-13.5	...	1.7	...	-12.5	-12.5	...	...	36.
...	...	-27.1	3.2	...	...	.0	...	-27.1	...	...	3.2	-27.1	-27.1	...	...	37.
...	...	-21.7	-32.0	7.1	...	.0	...	-2.0	-20.1	-26.7	-11.9	-44.0	-44.0	...	...	38.
-5.4	...	-42.2	-38.1	-32.2	*	...	...	-10.2	...	.2	-38.0	-64.2	-64.2	...	...	39.
...	...	26.9	35.2	...	...	...	...	10.6	...	16.3	35.2	51.4	51.4	...	...	40.
-5.0	-4.7	1.9	-5.3	...	...	...	...	...	...	1.9	-5.3	-8.2	11.2	19.4	...	41.
-16.4	...	...	.5	...	...	...	...	...	*	...	.5	-16.5	-9.1	7.4	...	42.
...	...	...	10.1	...	...	...	...	...	...	...	10.1	-1.3	-1.3	...	...	43.
36.1	14.3	83.1	124.6	6.8	7.8	-2.4	1.3	15.9	48.9	62.8	66.6	182.1	157.0	-25.1	...	44.
30.6	...	-14.7	...	-1.1	...	-2.0	...	19.2	...	-30.8	...	4.0	...	4.0	-8.2	45.

6. For the U.S. government sector, mineral rights sales shown on this line as a negative expenditure appear in the Z.1 statistical release as a source of funds with a positive sign.

7. SDR, special drawing right.

8. RP's repurchase agreements.

9. n.e.c. not elsewhere classified.

* In absolute value, greater than zero and less than \$50 million.

Table 3.3

Simplified Flow-of-Funds Matrix, 1991 (billions of dollars)

Item	Private domestic nonfinancial sectors ¹		Foreign sector		U.S. government		Financial sectors		Total	
	Use	Source	Use	Source	Use	Source	Use	Source	Use	Source
1. Gross saving	1,351.3	...	...	-8.9	...	-236.0	...	39.0	...	1,145.4
2. Gross investment	1,349.5	...	4.8	...	-266.6	...	53.7	...	1,141.3	...
3. Capital expenditures	1,107.8	...	...	...	-2.8	...	62.2	...	1,167.2	...
4. Net financial investment	241.7	...	4.8	...	-263.8	...	-8.5	...	-25.9	...
5. Net acquisition of financial assets	462.9	...	50.5	...	49.6	...	765.1	...	1,328.1	...
6. Net increase in liabilities	...	221.2	...	45.7	...	313.4	...	773.6	...	1,354.0
7. Discrepancy ²	1.8	...	-13.7	...	30.6	...	-14.7	...	4.0	...
8. Total ³	1,572.5	1,572.5	36.8	36.8	77.4	77.4	812.6	812.6	2,499.4	2,499.4

1. Includes state and local government general funds.

2. For each sector or group of sectors, the discrepancy equals gross saving (line 1) less gross investment (line 2).

3. For columns showing uses of funds, line 8 equals the sum of rows 3, 5, and 7; for columns showing sources of funds, line 8 equals line 1 plus line 6. Components may not sum to totals because of rounding.

of funds for these sectors, however, and the sectors' investing or financing would have to be adjusted. In this scenario, the analyst would perhaps have mortgage lenders increase their deposit liabilities through an increase in offering rates on deposit accounts, or increase their mortgage loans outstanding by lowering the interest rates charged on mortgage loans relative to those on consumer credit, both of which would set in motion further changes for other sectors and in other markets. The analyst might use behavioral assumptions or empirical evidence from other studies to determine what the likely repercussions would be.

After numerous changes, the analyst would eventually have the matrix balanced for all columns and rows and would thus have predicted a consistent set of flows. A comparison of the newly balanced matrix with an earlier one prepared before the original shift in borrowing took place would indicate the economy-wide effects in sectors and transactions that would result from the shift, given the assumptions made by the analyst at different stages of the exercise.

This type of analysis can be performed for other economic events as well—for example, when changes in interest rates induce corporations to restructure their debt, or when regulatory changes lead commercial banks to alter the mix of their loan and security holdings. When an analyst wants to determine the probable future effects of an actual or hypothetical event, the subsequent changes in individual "cells" of the matrix can be estimated; the process of balancing the matrix becomes a macroeconomic simulation exercise in ensuring consistency in financial markets. In tracing the course of actual events, on the other hand, market shifts and the adjustments that occur in response and that balance the matrix are constantly in process; the task of flow-of-funds analysis is to discover where the changes have taken place. In this case an analyst might compare the recorded values in the matrixes for the time periods before and after an event and note all the changes, using statistical techniques to discover which of the new values in the matrix were related to the event being studied.

Relationship to the National Income and Product Accounts

As the financial counterpart to the NIPA, the flow-of-funds accounts relate transactions in financial markets to nonfinancial activities in the economy by showing the uses to which saving is applied and the means by which tangible investment is financed. The discussion in the preceding section noted that saving is a nonfinancial source of funds. Each sector in the economy receives some form of current income or receipts: Households receive personal income from the sale of their labor services and from nonwage sources such as interest and rental payments, unincorporated proprietors' income, and dividends from corporations; businesses, including financial businesses, earn revenues from the sale of goods and services or from returns on investments; and governments receive tax payments, fees for services, and social insurance contributions.

Each sector likewise makes current outlays; for example, households con-

sume goods and services, businesses pay wages and incur other costs, and governments spend for defense, education, and other purposes, leaving (apart from adjustments) saving as the residual component of income. In the tables in the Z.1 statistical release, each domestic-sector table shows the sector's saving, and in some cases total income before expenditures, as calculated in the NIPA. For conceptual reasons, a small portion of total saving in the NIPA is reallocated among the sectors in the flow-of-funds accounts. When saving is aggregated across all sectors in the accounts, however, it is equal to national saving as published in the NIPA, except for certain identifiable differences that are discussed below. In this way, saving as presented in the sector tables in flow-of-funds publications can be thought of as a deconsolidation of national saving.

The differences between the total of national saving as presented in the flow-of-funds accounts and in the NIPA are summarized in Table 3.4, which, like Table 3.3, aggregates the data shown in the tables in Z.1. Gross *private* saving (line 1) is larger in the flow-of-funds accounts than in the NIPA, by \$528 billion. The first element of the difference, \$82 billion (line 2), results from a shift of saving—credits from insurance and pension funds for government employees—from the federal government and state and local government sectors to the household sector, making it an element of gross *private* saving. The federal government component equals the change in U.S. government liabilities for insurance reserves and pension fund reserves for civil service and railroad retirement; the state and local government component is the change in total liabilities, equal to the change in total financial assets, of state and local government employee retirement funds. Moving these financial flows to the household sector results in consistent treatment of private sector and public sector insurance and retirement saving in the flow-of-funds accounts; all of these reserves are financial assets of the household sector.

The second element of the difference between the total of national saving in the flow-of-funds accounts and in the NIPA is the difference in treatment of consumer durable goods, reflected in the calculation of both gross saving (line 4) and gross domestic investment (line 5).² In the NIPA, household outlays for durable goods, \$446 billion in 1991, are classified as personal consumption expenditures on goods that are consumed during the period in which they are purchased. In the flow-of-funds accounts, in contrast, purchases of durable goods are considered capital investment expenditures because durable goods provide services for a longer period of time than the current period, because to a significant degree they provide services that otherwise would be provided by businesses through their purchases of equipment, and because they are often financed by debt. Consequently, (1) saving by households is adjusted upward in the flow-of-funds accounts by the total of durable goods purchases, and national saving is larger in the flow-of-funds accounts than in the NIPA by this amount; and (2) total investment by the household sector in physical goods includes the expenditures on durables. No imputation of income is made to households from the flow of services from durable goods.

Table 3.4

Gross Saving and Investment in the Flow-of-Funds Accounts and the National Income and Product Accounts, 1991 (billions of dollars)

Item	Flow of funds accounts (FOF)	National income and product accounts	Difference	Source of difference
1. Gross private saving	1,429.9	901.5	528.4	Lines 2 and 4
2. Government surplus	-275.6	-193.3	-82.3	Credits from government insurance
3. Capital grants to the U.S.	—0	—0	—0	Omitted from FOF flows
4. Gross saving	1,154.3 ¹	708.2	446.1	Lines 3, 5, and 9
5. Gross domestic investment	1,167.2	721.1	446.1	Consumer durable goods
6. Net foreign investment	-4.8	8.9	-13.7	Lines 3 and 10
7. Gross investment	1,162.5	730.1	432.4	Lines 5 and 10
8. Statistical discrepancy (line 4 less line 7)	-8.2	-21.9	-13.7	Lines 9 and 10
9. Wage accruals less disbursements	.0	.0	.0	Omitted from FOF flows
10. Statistical discrepancy in international transactions	...	...	-13.7	FOF line 6 is based on capital flows rather than current—account balance
11. Memo Gross private domestic investment	1,170.0	721.1	448.9	Line 5 less mineral rights sales by the U.S. government

1. Amount differs from total in Table 3.3 by foreign sector saving.

The other differences in gross saving between the flow-of-funds accounts and the NIPA are less significant. One of these differences is the treatment of the U.S. allocation of special drawing rights (SDRs), which in the NIPA is considered a capital transfer from abroad but in the flow-of-funds accounts appears only as an adjustment in the level of U.S. holdings of SDRs.³ The most recent allocation of SDRs occurred in 1981, and this difference between the NIPA and the flow-of-funds accounts has been zero since then. Another item, wage accruals less disbursements, frequently equal to zero, is included in the NIPA but is excluded from the flow-of-funds accounts except as an element of the nonfinancial discrepancy series, a balancing item shown in the detailed matrix.

Table 3.4 illustrates that, in addition to the differences between the NIPA and the flow-of-funds accounts in the values for gross saving, there are also differences between the two systems in the values for gross investment. One reason is the difference in the treatment of consumer durable goods, discussed above. Another reason is that measures of the contribution of the foreign sector to gross investment in the NIPA and in the flow-of-funds accounts differ by the estimated

amount of the foreign sector discrepancy. This discrepancy reflects two factors. First, differences exist between the NIPA data and the balance of payments data used in the flow-of-funds accounts because of revisions and differences in timing; second, the NIPA exclude economic activity in U.S. possessions, whereas the balance of payments accounts include it.

Another difference in the value for gross investment in the NIPA and the flow-of-funds accounts, this one in the figure for gross *private* domestic investment, is due to the treatment of mineral rights sales (currently consisting of rents and royalties on the outer continental shelf lands) by the U.S. government, a series that is not found in the NIPA. In the flow-of-funds accounts, this item is considered a sale of a capital item by the U.S. government and is entered as a negative capital expenditure for the sector, -\$2.8 billion for 1991. The same amount is entered as a positive capital expenditure for the nonfarm nonfinancial corporate business sector. When capital expenditures are added for all sectors to obtain total gross investment, the two amounts offset each other. Gross private domestic investment, however, differs from total gross domestic investment in the flow-of-funds accounts by the amount of the mineral rights sales. Line 11 in Table 3.4 shows gross private domestic investment as a memorandum item.

Table 3.5 shows the allocation of components of saving and investment in the NIPA among flow-of-funds sectors. The allocation reflects, in part, differences in definitions of sectors: Saving and investment by corporate farms are in the farm business sector in the flow-of-funds accounts, but they are in the nonfinancial corporate business sector in the NIPA; state and local government general funds and state and local government retirement funds constitute a single sector in the NIPA, but they are two distinct sectors in the flow-of-funds accounts. Total gross saving (line 16) is calculated by adding expenditures on consumer durable goods (line 12) to NIPA gross saving and deducting items not included in flow-of-funds saving (line 15), which in this case total zero. Lines 13 and 14 show the reallocation of a portion of government saving to the household sector described earlier; the reallocation does not affect total gross saving. Finally, the deduction of capital consumption (lines 17 and 18) results in net saving (line 19).

The lower part of Table 3.5 shows the allocation of the components of investment in the NIPA among flow-of-funds sectors. Gross domestic investment in the NIPA differs from that in the flow-of-funds accounts by the same amount of consumer durable goods (line 24) that was added to saving in line 12. The sales of mineral rights by the U.S. government to nonfarm nonfinancial corporations are shown in line 25.

Monthly Debt Aggregate

In 1983 the Federal Open Market Committee (FOMC) established a monitoring range for the growth of credit market debt of domestic nonfinancial sectors. This "debt aggregate" replaced bank credit as part of the information that the Federal

Table 3.5

Allocation of NIPA Saving and Investment Among Sectors Included in the Flow-of-Funds Accounts, 1991¹ (billions of dollars)

Item	Total	Household sector	Nonfinancial business			Government		Financial sectors	Items not in FOF
			Farm	Nonfarm noncorporate	Corporate	State and local	U.S.		
SAVING									
1. Personal saving	199.6	199.6	..1	...	57.2	...	...	7.1	...
2. + Undistributed corporate profits	64.2	...	...	...	...	...	...	...	...
3. + Corporate inventory valuation adjustment	3.1	...	...	...	3.1	...	...	...	...
4. + Corporate capital consumption adjustment	8.5	...	1.6	...	17.8	...	...	-11.0	...
5. + Corporate capital consumption	383.0	...	1.6	...	338.5	...	...	42.9	...
6. + Noncorporate capital consumption	243.1	121.6	19.8	101.7	...	...	...	...	...
7. + Wage accruals less debentures	.0	...	...	...	...	...	...	...	.0
8. + U.S. government surplus	-210.4	...	...	...	...	...	-210.4	...	...
9. + State and local government surplus	17.2	...	...	...	...	17.2	...	...	...
10. + Capital gains to the U.S.	.0	...	...	...	...	...	...	...	.0
11. = Gross saving, NIPA basis	708.2	321.2	23.0	101.7	416.5	17.2	-210.4	39.0	.0
12. + Consumer durable goods	446.1	446.1	...	...	...	...	...	...	...
13. + U.S. government treasuries and pension fund reserves	.0	25.6	...	...	...	...	-25.6	...	...
14. + State and local government pension fund reserves	.0	56.7	...	...	...	-56.7	...	...	...
15. = Items not in FOF ¹	1,154.3	849.6	23.0	101.7	416.5	-39.6	-236.0	39.0	.0
16. = Gross saving, FOF basis									
17. = Capital consumption on durables	404.5	404.5	21.4	101.7	338.5	...	...	42.9	...
18. = Other capital consumption (line 5 plus line 6)	626.1	121.6	1.6	.0	78.1	-39.6	-236.0	-3.9	.0
19. = Net saving, FOF	123.8	323.6							
INVESTMENT									
20. Residential construction	190.3	172.2	1.3	15.5	1.1	...	...	.2	...
21. + Nonresidential plant and equipment	541.1	37.4	10.4	61.6	369.8	...	...	62.0	...
22. + Change in business inventories	-10.2	107.2	.1	-3	-4.8	...	...	...	...
23. = Gross domestic investment, NIPA basis	721.2	209.5	11.7	76.8	361.1	...	...	62.2	...
24. + Consumer durable goods	446.1	446.1	...	...	...	...	...	...	...
25. + Mineral rights from U.S. government	.0	.0	...	...	2.8	...	-2.8	...	...
26. = Gross domestic investment, FOF basis	1,167.2	655.6	11.7	76.6	363.9	...	-2.8	62.2	...

1. NIPA, national income and product accounts; FOF, flow of funds accounts.

Components may not sum to totals because of rounding.

2. Line 15 equals line 7 plus line 10.

Reserve Board reports to the Congress twice a year as required by the Full Employment and Balanced Growth Act of 1978 (the Humphrey-Hawkins Act). The monthly debt aggregate is published in the Federal Reserve Board's weekly H.6 statistical release, "Money Stock, Liquid Assets, and Debt Measures."

The debt aggregate is constructed from data in the flow-of-funds accounts. The flow-of-funds measures reported in the Z.1 release are levels at the end of a quarter or a year, whereas the debt aggregate, like the monetary aggregates, is reported as an average level outstanding during a month or quarter. The FOMC's monitoring range for the debt aggregate applies to growth, from the fourth quarter of the previous year to the fourth quarter of the current year, in the average amount of debt outstanding.

Construction of the debt aggregate involves several steps. First, a month-end debt series is prepared. Monthly data are available for several components of the total—federal debt, consumer credit, commercial paper, and finance company loans to business. Monthly data for portions of the other components are also available; the missing portions of these series are estimated from quarterly data.

The second step in constructing the debt aggregate is to adjust the month-end series for statistical discontinuities, or breaks, in the data. A break occurs when the sample changes or when the series is revised to incorporate new benchmark data, is revalued to market prices, or is redefined. Both the month-end and quarter-end data for credit market debt of domestic nonfinancial sectors contain such breaks. The chapter of this guide on data characteristics discusses breaks in data in more detail.

To remove a discontinuity from the month-end debt series, staff members of the Flow-of-Funds Section review the reasons for the break and work the amount of the break into the flows data (and levels data) gradually over an appropriate period immediately preceding the discontinuity period. If specific information about the pattern with which the break should be incorporated in the series is not available, the break amount is worked into the series by calculating the compounded rate at which the level would have to grow (or shrink) over a predetermined period to reduce the break amount to zero. The monthly levels are then adjusted over the intervening period, maintaining the pattern that existed by moving the levels up (or down) gradually between the starting and ending points up to the amount of the break. Flows are then calculated as the first differences of the newly constructed levels. An instance of this process occurred in 1989, when responses to a new question on a survey regularly conducted by the Federal Reserve Board revealed that \$8 billion in securitized consumer credit receivables had not previously been reported. The series was adjusted upward by the \$8 billion in January 1989, which meant that the series contained a break of that amount for that month. Because consumer credit had been securitized with regularity since 1984, the \$8 billion was worked into the figures for 1984 through 1989, creating a new break-adjusted month-end series.

The final step in constructing the debt aggregate is to prepare the month-average series. The month-average series is calculated as the average of consecutive

months in the series after the series has been adjusted for breaks. For example, the debt aggregate reported for January is the average of end-of-December and end-of-January figures. It is this monthly series that is published in the H.6 statistical release.

Organization of the Accounts

The richness of the flow-of-funds accounts lies, in part, in their detailed presentation of economic sectors and financial transactions.

Sectors

In the accounts, the economy is divided into twenty-seven sectors—for example, households, federally related mortgage pools, and life insurance companies. For purposes of analysis, the sectors can be combined into broader groups, as shown in Figure 3.1. (Several of these broader groups are used in Table 3.2 above.) The noncorporate business group, for example, is made up of the farm business and nonfarm noncorporate business sectors. This group, together with the household sector, nonfarm nonfinancial corporate business, and the two government sectors, make up the domestic nonfinancial group. The combined debt of these sectors, discussed in the section on the monthly debt aggregate, is monitored by the Federal Open Market Committee because it is one indicator of the effect of monetary policy. The foreign sector is added to the domestic nonfinancial group to form the nonfinancial group of sectors.

The financial sectors are shown in lines 8 through 27 in Figure 3.1; within the financial sectors are bank and nonbank groups. The bank (or commercial banking) group encompasses four types of depository institutions (lines 11 through 14); the nonbank group is made up of thirteen sectors, both depository and nondepository institutions (lines 15 through 27). State and local government employee retirement funds constitute a separate sector in the financial group, although state and local government general funds are a nonfinancial sector.

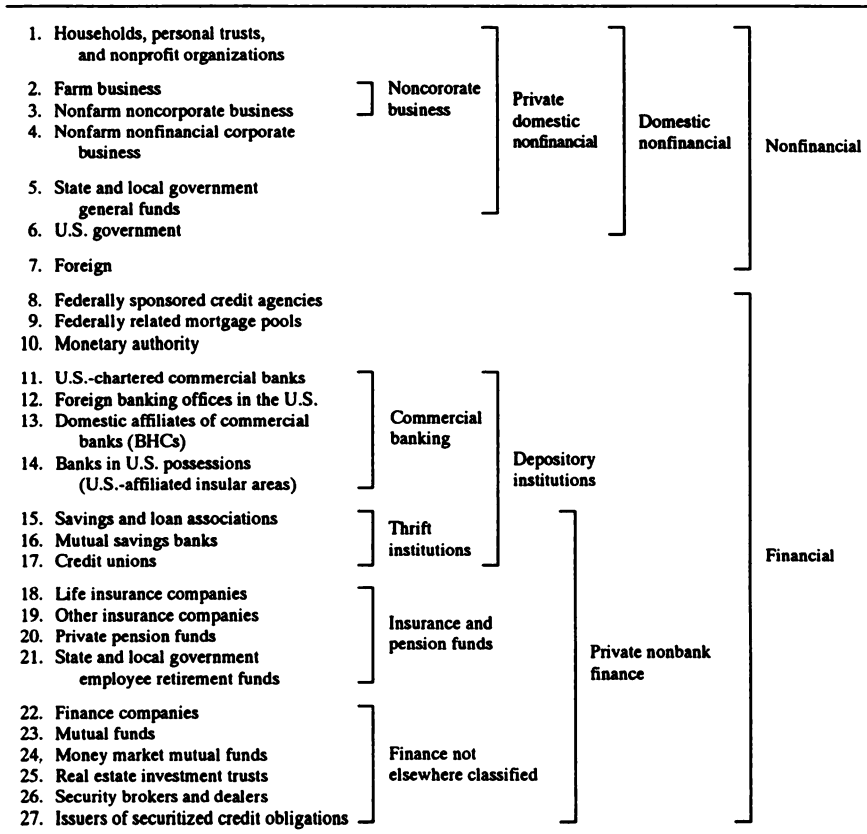
Transaction Categories

The large number of financial transaction categories in the flow-of-funds accounts provides added detail. Transactions can also be combined into analytically useful groups, shown in Figure 3.2. One such group, for example, is credit market instruments; this group is of major importance because the transactions carried out by these instruments are the ones besides equities that take place in organized financial markets.

Uses of the Accounts

Information from the flow-of-funds accounts is used in many ways to describe and analyze economic and financial developments in the United States. For

Figure 3.1 Sector Groupings in the Flow-of-Funds Accounts



example, data from the accounts figure prominently in Federal Reserve Board reports to the Congress, such as the semiannual monetary policy reports required by the Full Employment and Balanced Growth Act of 1978 and the 1993 report on Credit Availability for Small Businesses and Small Farms. Flow-of-funds data also are cited in analytical studies reported in the monthly *Federal Reserve Bulletin* and in academic journals, newspapers, and financial market newsletters.

The following description of several key financial developments in the U.S. economy is based on information from the flow-of-funds accounts and illustrates the use of the accounts in understanding the course of events.⁴ Nearly all the data in the figures and the table that accompany the description are from the flow-of-funds accounts. A note at the bottom of each figure lists, for each data series in the chart, (1) the Federal Reserve Board statistical release in which the data series appears; (2) the table in which the series appears (*L* preceding the table number denotes a table containing levels data; *F*, a table containing flow

Figure 3.2 Financial Transaction Categories in the Flow-of-Funds Accounts

1. Gold and official foreign exchange holdings	}	Monetary reserves
2. Treasury currency and SDR certificates		
3. Life insurance reserves	}	Insurance and pension fund reserves
4. Pension fund reserves		
5. Net interbank claims	}	Interbank claims
6. Checkable deposits and currency	}	Deposits and federal funds
7. Small time and savings deposits		
8. Large time deposits		
9. Money market mutual fund shares		
10. Federal funds and security repurchase agreements		
11. U.S. deposits in foreign countries	}	
12. Mutual fund shares	}	Equity issues
13. Corporate equities		
14. Corporate and foreign bonds	}	Credit market instruments
15. U.S. government securities		
16. Treasury issues		
17. Savings bonds		
18. Other Treasury issues		
19. Agency issues		
20. Securities issued by agencies included in the U.S. budget		
21. Loan participations		
22. Sponsored agency issues		
23. Mortgage pool securities		
24. Tax-exempt debt securities and loans		
25. Total mortgages		
26. Home mortgages		
27. Multifamily residential mortgages		
28. Commercial mortgages		
29. Farm mortgages		
30. Consumer credit		
31. Installment consumer credit		
32. Noninstallment consumer credit		
33. Bank loans not elsewhere classified		
34. Open market paper		
35. Commercial paper		
36. Bankers acceptances		
37. Other loans		
38. Savings and loan association loans to business		
39. Finance company loans to business		
40. Loans to business held by issuers of securitized credit obligations		
41. U.S. government loans		
42. Loans from sponsored credit agencies		
43. Policy loans on life insurance		
44. Customers liability on acceptances		
45. Foreign loans to U.S. nonbank borrowers		
46. Security credit	}	Other claims
47. Trade credit		
48. Taxes payable by businesses		
49. Proprietors equity in noncorporate business		
50. Total miscellaneous financial claims		
51. Identified miscellaneous financial claims	}	
52. Unidentified miscellaneous financial claims		
53. Sector discrepancies	}	Discrepancies
54. Transaction discrepancies		

data; and *B*, a table from the sector balance sheets); (3) the line number of the series; and (4) the computer code for the series.

Overview of U.S. Credit Flows, 1972–92

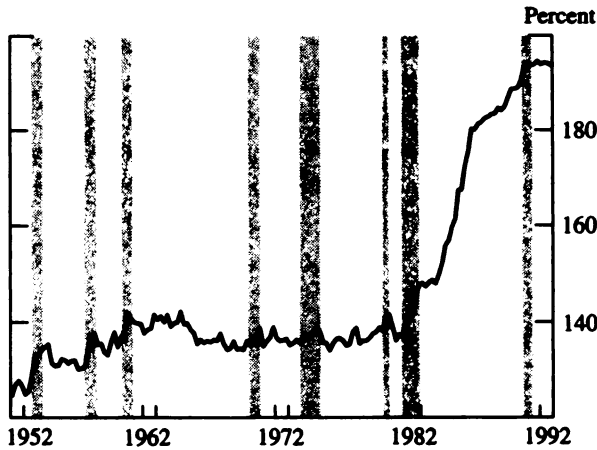
U.S. financial markets and the relationship between financial transactions and economic activity have changed in dramatic ways over the past two decades. Economists frequently summarize the relationship between production and financial activity with broad measures; one such measure is the ratio of debt of the domestic nonfinancial sectors—governments, businesses, and households—to the value of the nation's output, gross domestic product (GDP), expressed in nominal terms, or current prices. This ratio was relatively stable during the quarter century before 1982 (Figure 3.3). Between 1982 and 1990, however, debt expanded at a much faster pace than the nominal value of output. This explosion in debt was especially striking in the business sector, where the replacement of equity by debt led to an unprecedented restructuring of the capital base for nonfinancial corporations. Households and governments also borrowed heavily, as individuals increased their mortgage and consumer-credit indebtedness and governments issued more debt securities.

The slowing of debt growth that accompanied the onset of the economic recession in 1990 was nearly as dramatic as the rise. The movement during and immediately after the recession to reduce debt servicing burdens by borrowing less, refinancing existing debt with obligations that carried lower interest rates or longer maturities, and issuing equity has been cited as both a cause and a result of the subsequent slow pace of economic recovery in 1991 and 1992.

Meanwhile, the channels through which credit makes its way to borrowers have changed substantially. In the 1970s, depository institutions—banks, savings and loan associations, mutual savings banks, and credit unions—were the predominant lenders in the economy. The growth of their loan and security portfolios approximately matched the expansion of debt of the nonfinancial sectors (Figure 3.4). But the role of depositories began to decline in importance in the mid-1980s. Assets of savings and loan associations dropped nearly 40 percent between the end of 1988 and the end of 1992 as many of the institutions failed. In contrast, life insurance companies, pension funds, and mutual funds become increasingly important channels for financial intermediation. Moreover, new types of securities, backed by pools of loans (particularly home mortgages) or receivables, captured a growing segment of the credit market.

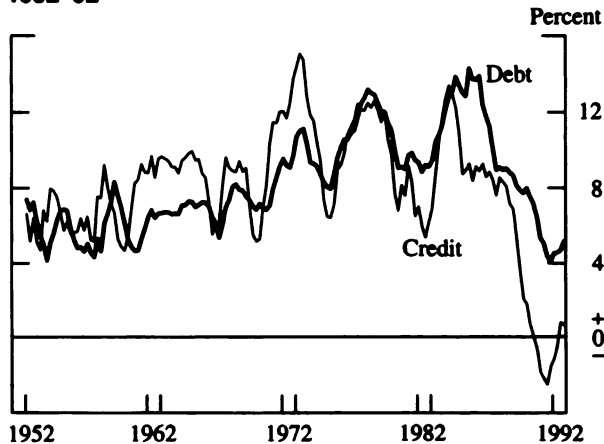
The Rise and Fall of Debt

The change in total debt relative to the nation's output is one of the more striking macroeconomic financial developments of the postwar period. The ratio of domestic nonfinancial debt to nominal GDP had fluctuated within a relatively

Figure 3.3 Domestic Nonfinancial Debt as a Percentage of GDP, 1952–92

From the Z.1 release: Table L.2, line 1 (series $\text{f}384104005.q$), divided by table F.1, line 1 ($\text{fa}086902005.q$), multiplied by 100. See part 2 for an explanation of series codes.

In this and subsequent charts, shading indicates periods of recession as defined by the National Bureau of Economic Research.

Figure 3.4 Growth of Domestic Nonfinancial Debt and Depository Credit, 1952–92

Debt—From the Z.1 release: Table F.2, line 1 (series $\text{fa}384104005.q$), divided by table L.2, line 1 ($\text{f}384104005.q$, lagged one quarter), multiplied by 100. *Credit*—From the Z.1 release: Sum of table F.111, line 42 ($\text{fa}764004005.q$), and table F.117, line 8 ($\text{fa}494004005.q$), divided by the sum of table L.111, line 38 ($\text{f}764004005.q$, lagged one quarter), and table L.117, line 6 ($\text{f}494004005.q$, lagged one quarter), multiplied by 100. Data are four-quarter moving averages.

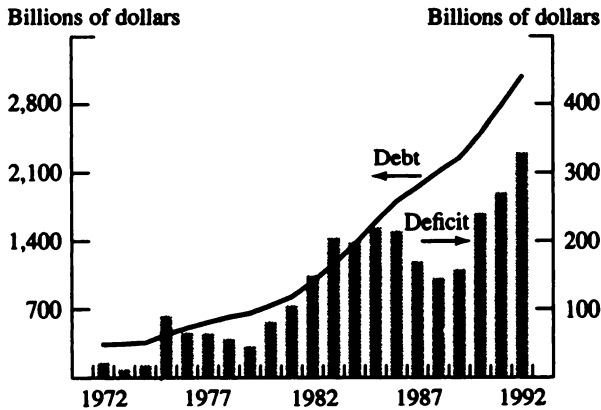
narrow band for most of the period between the mid-1950s and 1982, averaging about 135 percent. Private-sector borrowing tended to move up and down in tandem with business activity, reflecting the use of credit to finance consumer durable goods, business investment in equipment and inventories, and construction activity of all types. Federal government borrowing, on the other hand, was largely countercyclical. Federal government deficits tended to widen during recessions because tax revenues weakened and expenditures to support declining incomes increased. Economic expansions generally strengthened the government's budgetary position. Thus, changes in private and public debt growth largely had offset one another.

The stable ratio of debt to income prompted some economists in the late 1970s and early 1980s to suggest that monetary policy should target a broad credit aggregate—in place of, or alongside, the monetary aggregates. As noted in the earlier discussion of the monthly debt aggregate, the Federal Open Market Committee (FOMC) in 1983 began setting a monitoring range for domestic nonfinancial debt.⁵ At about the same time, this debt aggregate began rising much more rapidly than GDP, with the ratio approaching 200 percent by the end of the 1980s. The ratio flattened in 1990, 1991, and 1992, but at the new, elevated level.

No single factor appears to explain the sharp upturn in relative debt growth. Most explanations that have been offered refer to a combination of factors, including reduced costs to businesses and households of financial leveraging, changes in the regulatory environment for depository institutions, a broadening of credit markets to encompass foreign sources, and new technologies that enhanced the exchange of information and spurred the development of new instruments to control economic risk. These factors appear to have affected the borrowing habits of governments, businesses, and households in different ways and at different times, leading most analysts to focus on events in individual sectors.

A major component of the growth of nonfinancial debt in the 1980s was the ballooning of the deficits of the federal government during the period of economic expansion. Between 1972 and 1979, federal government debt increased, but its growth was slower than the growth of nominal GDP. Beginning in 1980, however, the step-up in the size of federal government deficits, which reflected unprecedented changes in tax law, a buildup in national defense, and growth in social welfare programs, pushed the federal government debt up at double-digit rates. By the end of 1992, federal government debt held by the public totaled \$3.1 trillion, more than triple the level of a decade earlier (Figure 3.5).

In contrast to earlier periods, the uptrend in the debt of the federal government relative to GDP was not accompanied by offsets in the nonfederal sectors. For example, net issuance of tax-exempt securities, most of which are offered by state and local governments, showed no slackening in the 1980s. To the contrary, net issuance was especially strong in the middle of the decade; many govern-

Figure 3.5 Federal Debt and Deficit, 1972–92

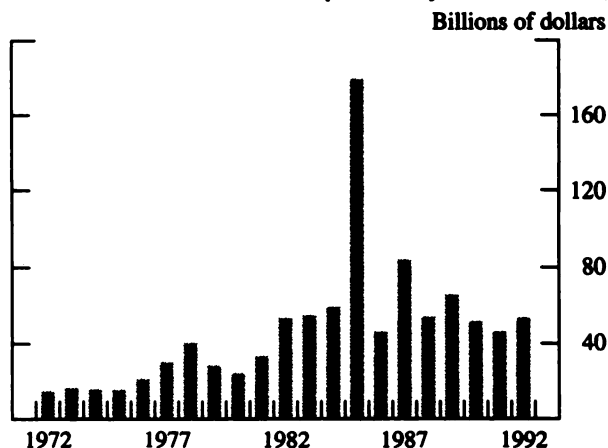
Debt—From the Z.1 release: Table L.106, line 16 (series fl314102005.a). *Deficit*—Monthly series from *Monthly Treasury Statement of Receipts and Outlays of the U.S. Government*, table 2, Summary of Budget and Off-Budget Results and Financing of the U.S. Government, converted to annual rate, with sign reversed.

ments and related entities issued large volumes of debt securities in anticipation of proposed federal tax legislation that would restrict offerings of public- and private-purpose bonds (Figure 3.6). (Subsequently, such restrictions actually were enacted.)

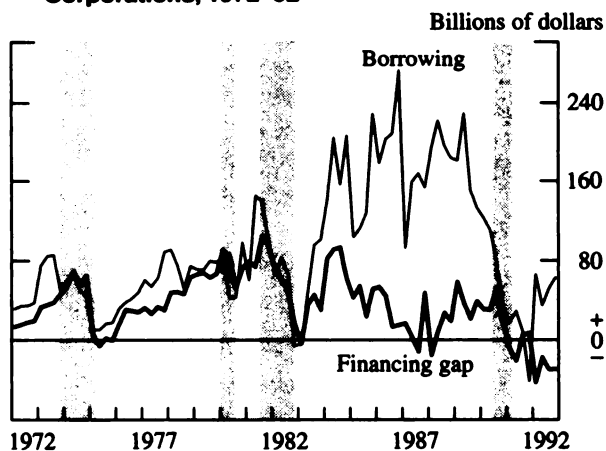
Later in the 1980s and in the early 1990s, growth in the debt of state and local governments was buoyed by increasing fiscal pressures. Financial support from the federal government diminished and revenue growth from the state and local governments' own sources slowed at the same time that demand for services such as Medicaid, corrections, and education was rising rapidly. With operating accounts squeezed, state and local governments apparently funded an increasing proportion of their capital spending by borrowing.

Debt of the state and local government sector also was boosted because many governments found it advantageous to "advance refund" obligations that had been issued earlier at higher interest rates. Such advance refinancing of debt was matched by increases in financial assets, as the funds raised were typically used to purchase SLGS (state and local government series), special nonmarketable U.S. Treasury securities with maturities tailored to match the first call date of the bonds that the governments refund.

For the business sectors, debt growth has tended to exceed the growth of nominal GDP during most of the postwar period, but the uptrend steepened with the economic expansion of the 1980s and then declined just before the recession in 1990. Borrowing by nonfinancial corporations in the 1970s appears to have been closely tied to the difference between their capital outlays for buildings, equipment, and inventories and their internal cash flow. This so-called financing

Figure 3.6 Net Issuance of Tax-Exempt Debt by All Borrowers, 1972–92

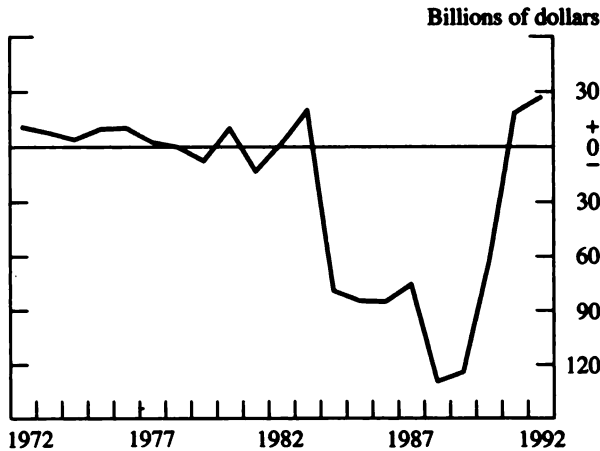
From the Z.1 release: Table F.212, line 1
(series fa253162005.a).

Figure 3.7 Credit Market Borrowing and Financing Gap, Nonfinancial Corporations, 1972–92

Borrowing—From the Z.1 release: Table F.104, line 40 (series fa104104005.q). *Financing gap*—From the Z.1 release: Table F.104, line 68 (fa105005305.q).

gap is plotted in Figure 3.7, along with net new borrowing of all nonfinancial corporations.

As Figure 3.7 suggests, corporations altered their financing activities in unprecedented ways in the mid-1980s, when borrowing greatly exceeded the financing gap. The additional borrowing was associated with a large number of mergers, acquisitions, and other types of corporate restructuring, some of them

Figure 3.8 Net Issuance of Corporate Equities, 1972–92

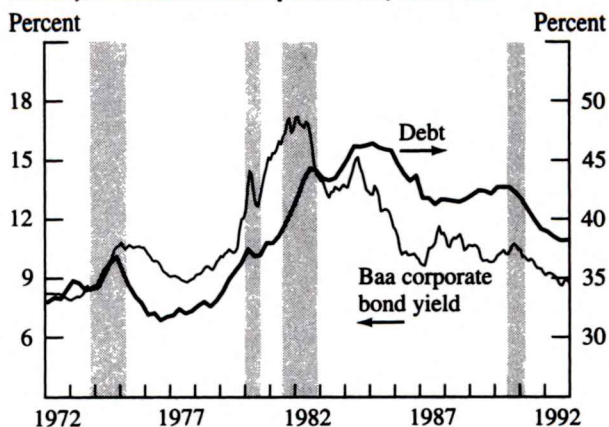
From the Z.1 release: Table F.104, line 39
(series fa103164003.a).

financed with “junk” bonds—below-investment-grade debt issues. The mirror image of the rise in corporate borrowing was an unprecedented retirement of equity: Between 1984 and 1990, nonfinancial corporations withdrew nearly \$650 billion worth of equity shares (Figure 3.8).

By the end of the decade, businesses had begun to reverse the earlier buildup in financial leverage. Indeed, the drop in borrowing was so precipitous that debt of the nonfinancial business sector at the end of 1992 was virtually the same as it had been at the end of 1990. Net equity issuance turned positive in 1991 and remained so in 1992. With interest rates on long-term debt declining, businesses also moved aggressively to restructure their balance sheets in other ways. By issuing bonds at a near-record pace, corporations were able to reduce their debt service through replacement of bonds that carried the higher interest rates of the 1970s and 1980s and to reduce obligations that had shorter maturities, such as bank loans and commercial paper. By the end of 1992, the ratio of these generally shorter-term obligations to total corporate debt had fallen to its lowest level in eleven years (Figure 3.9).

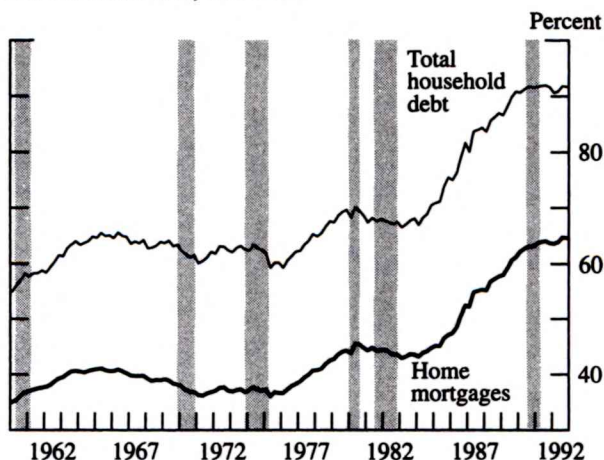
The rise in debt relative to income began earlier in the household sector than in the business and government sectors. The ratio of household debt to disposable personal income turned up noticeably in 1976, and the rise was interrupted only briefly by the economic recessions of the early 1980s (Figure 3.10). Borrowing backed by real estate—that is, mortgage loans to purchase homes or to tap equity in homes—accounted for the bulk of the pickup in overall debt of the household sector. Because prices of homes were rising appreciably on average from the mid-1970s to the mid-1980s, the amount of mortgage debt outstanding relative to the market value of owner-occupied real estate changed little during

Figure 3.9 **Short-Term Debt as a Percentage of Credit Market Debt, and Bond Yields, Nonfinancial Corporations, 1972–92**



Short-term debt—From the Z.1 release: Table L.104, line 44 (series fl104140005.q), divided by line 20 (fl104104005.q). *Baa corporate bond yield*—Moody's Investors Service average yield to maturity on selected long-term seasoned corporate bonds rated Baa, all industries. Short-term debt comprises loans and short-term paper.

Figure 3.10 **Debt of the Household Sector as a Percentage of Disposable Personal Income, 1960–92**



Total household debt—From the Z.1 release: Table L.100, line 26 (series fl154102005.q), divided by table F.100, line 3 (fa156012005.q), multiplied by 100. *Home mortgages*—From the Z.1 release: Table L.100, line 27 (fl153165105.q), divided by table F.100, line 3 (fa156012005.q), multiplied by 100.

that time (Figure 3.11)—no doubt reducing the perceived risk of the added debt to both borrowers and lenders. When the rise in home prices slowed in the second half of the 1980s, however, the ratio of mortgage debt to the value of real estate increased sharply, although the absolute amount of equity in homes continued to rise (Figure 3.12).

Like businesses, households cut their borrowing in the 1990–92 period. Households also took advantage of declining interest rates, in this case falling mortgage interest rates. Refinancing of mortgages served a number of purposes, including lowering monthly payments, shortening the maturity of the debt in order to build equity in homes more quickly, and enabling borrowers to consolidate debts by using cash from the proceeds to pay down burdensome consumer credit, which typically carries relatively short maturities and interest rates higher than those on mortgage debt. Consumer credit, which is frequently used to purchase automobiles and other consumer durable goods, actually contracted in 1991 and changed little in 1992.

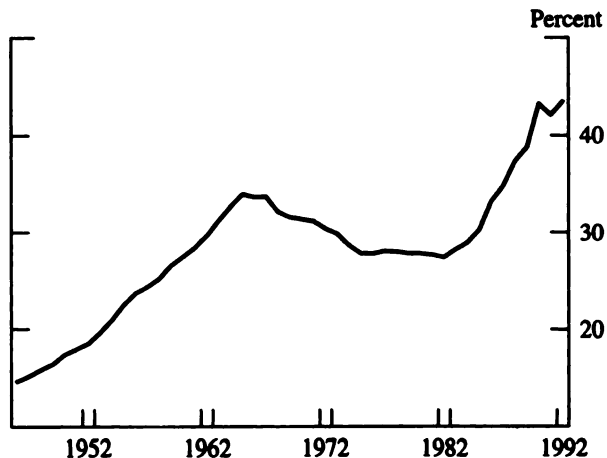
Sources of Credit

The past twenty years also have seen a significant evolution of financial intermediation. The interaction of changes in regulation, international competition in financial services, and the development of new types of financial instruments have changed the way saving flows are channeled to investments.

Table 3.6 provides a broad picture of this evolution. Depository institutions were the major suppliers of credit in the United States in the 1960s and 1970s, holding nearly half the outstanding credit market debt. With the shrinkage of the savings and loan industry and increased competition from other types of financial institutions, the share held by depository institutions dropped to less than 30 percent by the early 1990s. The slack was taken up by nondepository financial institutions, particularly mutual funds. Moreover, home mortgage financing increasingly was channeled through arrangements that involved the issuance of securities backed by a pool of loans. Although depositories became major holders of mortgage-backed securities, other lenders also purchased them, thereby widening the market for mortgage loans.

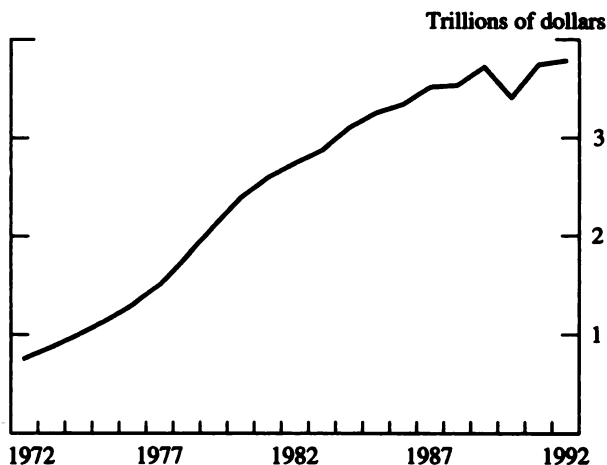
Life insurance companies and pension funds (private funds and funds for state and local government employees) together have accounted for approximately the same percentage of credit supplied over the past two decades. Pension funds, however, have become particularly important providers of equity capital. They held nearly 30 percent of total corporate equity shares at the end of 1992, more than double their share of the 1970s equity market.

Figure 3.11 Home Mortgage Debt as a Percentage of the Value of Owner-Occupied Real Estate, 1946-92



From the C.9 release: Table B.100, line 36 (series fl153165105.a), divided by line 47 (fl155035015.a), multiplied by 100.

Figure 3.12 Equity in Owner-Occupied Homes, 1972-92



From the C.9 release: Table B.100, line 47 (series fl155035015.a), less line 36 (fl153165105.a).

Table 3.6

Credit Market Funds, by Type of Supplier, 1960-92 (percentage of total outstanding, average during period)

Supplier	1960-69	1970-79	1980-89	1990-92
Depository institutions	43	46	39	29
Commercial banks	27	29	24	20
Thrift institutions	16	17	15	9
Nondepository institutions	29	30	36	45
Insurance companies	15	12	10	11
Pension funds	5	5	7	7
Mutual funds (including money market mutual funds)	*	1	3	6
Mortgage pools and federally sponsored agencies	2	4	8	11
Other financial sectors ¹	7	8	8	10
Nonfinancial sectors ²	28	24	25	26

1. Monetary authority, finance companies, real estate investment trusts, security brokers and dealers, and issuers of securitized credit obligations.

2. Household sector, nonfinancial business, state and local government general funds, U.S. government, and the foreign sector.

* Less than 0.5 percent.

Source: Flow of funds accounts, Z.1 statistical release, table L.6.

Notes

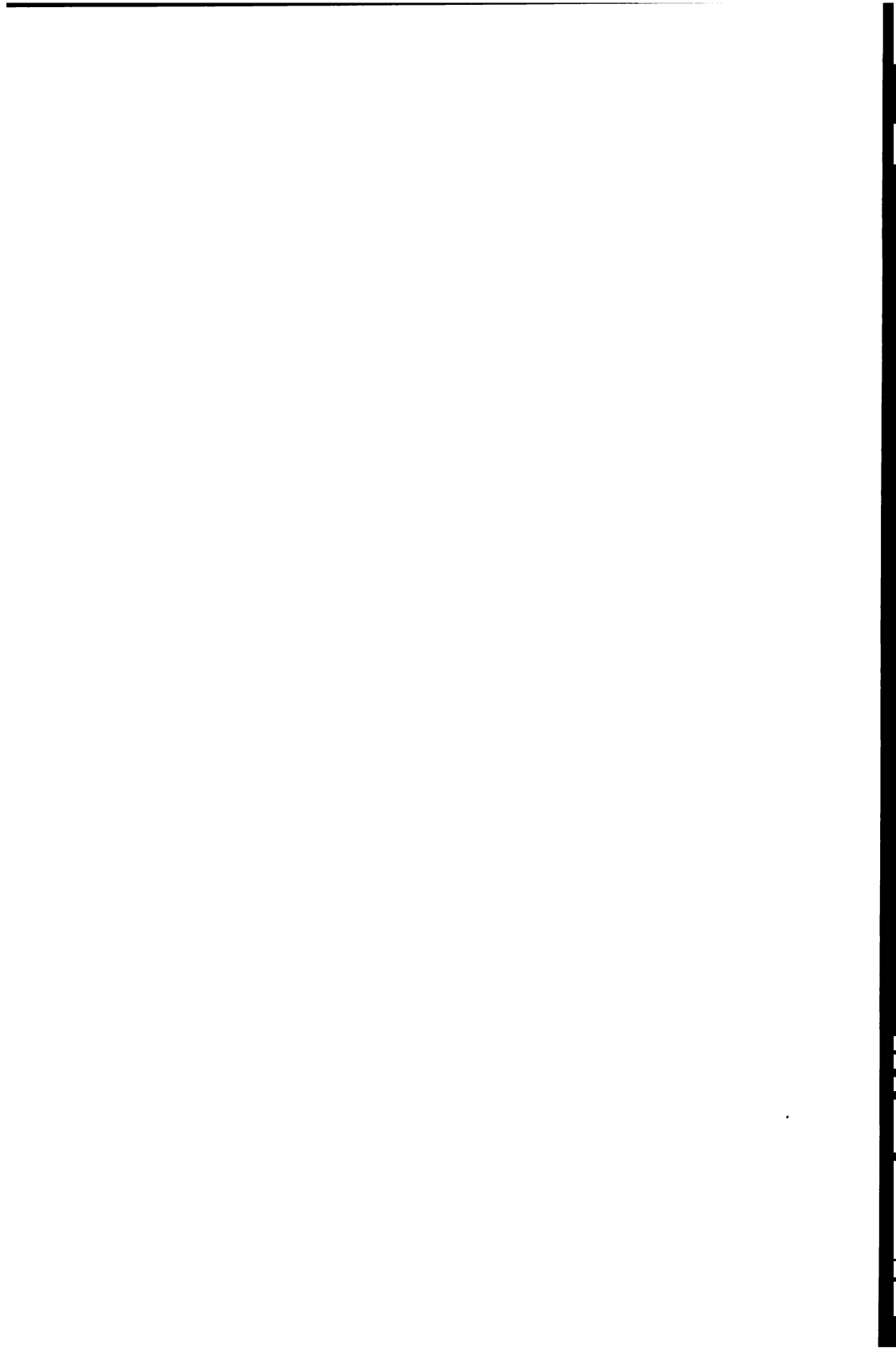
1. The SNA framework has been under review by the United Nations. A revised SNA is expected to be adopted in 1993, and the discussion here compares the flow-of-funds accounts with the proposed revised framework.

2. Examples of consumer durable goods are automobiles, furniture, computing equipment, and boats.

3. SDRs are a special class of reserve asset, created by international agreement, that can be used only by monetary authorities and certain international organizations to settle international reserve transactions. SDRs are freestanding assets that do not represent a liability of any specific foreign country or international organization.

4. Most of the material in this description has been discussed elsewhere, typically in greater detail, and the intention is not to present an alternative analysis or an exhaustive survey. Nonetheless, this brief history offers a perspective that may be of some interest on its own.

5. From 1979 to 1982, the FOMC monitored bank credit—a narrower, credit (rather than debt) aggregate.



Part II

Origin and Evolution of the Accounts



Introduction to Part II

It was Thorstein Veblen who first taught us that a key way to understand human institutions is to examine their development genetically. That is, one should go back through cultural history to the origins of the institution and then trace its development forward from its birth through its stages of growth into its maturity.¹ The underlying principle here is that any current human behavior is strongly conditioned by its previous phase. Part II carries out an analogous exercise to try to understand the flow-of-funds accounts, first exploring their origins in the moneyflows accounts and then tracing their evolution forward from the moneyflows system.

The moneyflows accounts were entirely the invention of a single economist: Morris A. Copeland. This is in sharp contrast to the national income and product accounts, which were developed cooperatively by a group of economists. Having to deal with only one inventor greatly simplifies our task; the origins of the moneyflows accounts must lie entirely in Copeland's thought. And what Copeland had had major influences on his invention.

James R. Millar's paper explores Copeland as an institutionalist and social scientist; my paper does the same for Copeland as a social accountant—or as I would put it, as the inventor of social accounting. Stephen P. Taylor's paper traces the metamorphosis from the moneyflows of 1952 to the present-day flow-of-funds. This is an evolution over much of which he presided as the chief flow-of-funds data producer at the Federal Reserve Board.

The design of the moneyflows accounts and Copeland's use of them, as Millar points out, strongly express his theoretical and methodological stance. As an institutionalist Copeland wanted the system to express the role of money seen as a key economic institution. For example, money in its medium of exchange function cushions the differences over time between a transactor's ordinary receipts and ordinary expenditures. But money balances are aided in this function by other credit instrument balances. So the accounts provide (and define operationally) measures of each sector's ordinary expenditures, ordinary receipts, cash balances, and other credit instrument balances. More broadly, the role of money and credit is to keep track of moneyflows in the economy. Further, cash balances have come to play a coordinating role between a sector's ordinary transactions

and its dealings in loans and securities. The accounts are arranged to facilitate statistical observation of these roles.

Copeland's institutionalism was not antitheory *per se* but it was strongly opposed to orthodox theory, whose justification he saw as doctrinal rather than empirical. He saw the quantity theory of money as a mathematically convenient addition to neoclassical doctrine. He confronted this theory with a factual social accounting analysis. Although he was well aware that in economics facts are often no match for firmly held doctrine, he nevertheless stuck to his own methods, procedures he saw as scientifically up-to-date. On the positive side, Copeland supplemented Mitchell's theory of business cycles with his "discretionary hypothesis," a way of identifying which sector or sectors are initiating up or down movements of the cycle. We should note that this hypothesis is formulated in terms of specified measurements—his moneyflow accounts—and that it can be verified by examination of these same measurements. Again, a reflection of his own methodology.

Now as Millar notes, these various analytical ideas have been ignored by academic economics. On the other hand, such ideas strongly shaped the nature of the moneyflow accounts. So various features stemming from Copeland's institutionalism and his scientific methods remain as the accounts have evolved down to us.

The theme of my own paper could be called "On the Merits of Borrowing." One of the principles of institutionalism is that the boundary lines of economics with other fields need to be explored. Copeland's study of accounting was a particularly apt case both because business accountancy is such a basic economic institution and because accounting data are the raw material for so much of economic statistics. But it was Copeland himself who most forcefully pursued the social analogues of the business income statement, balance sheet, and sources and applications of funds statement. As my paper tries to show, it was by this path that Copeland's institutionalism eventually gave us the moneyflow accounts.

Taylor's paper is an important one, the only one so far as I know reviewing the changes in the accounts over recent decades. The crucial point was the 1959 publication of the quarterly system, which marked a substantial integration with the national income and product accounts (NIPA) system. It was this shift—with its truncation of the flow-of-funds system's nonfinancial coverage—which compromised Copeland's original analytical approach. His "main money circuit" measurements were sacrificed. Taylor notes the practical push given this shift by the need to reduce hand computation requirements in that noncomputer era. I might add my own sense that the spirit of compromise with regard to conceptual treatments was not strong on the NIPA side.

Taylor characteristically underplays his own role in the long evolution, so I will add three of his contributions. First, he designed and executed the conversion of the hand worksheet system into a major computer program. In the end the current quarter's new raw data could be entered and the program took care of all

the worksheet computations and printed out current tables ready for publication. Secondly, the format of the flow-of-funds summary tables which he designed (see reading 2) provided standard measures of intermediation. These tables were a basic reorganization of the matrix format of the data, a new format that provided highly useful totals and helped focus analysis on the saving-investment process. Finally, through the years Taylor continually modified the sectors and transaction types of the flow-of-funds accounts to keep them in line with the institutional realities of the financial system.

Morris Copeland died in 1989. These papers were originally prepared for a Memorial Session honoring him at the 1991 program of the American Statistical Association. Stephen Taylor died in 1993. This book is dedicated to him.

Note

1. For example, in *The Theory of the Leisure Class*, Veblen uses this method to explain various Victorian consumer taste patterns.



JAMES R. MILLAR

Institutionalist Origins

(1991)

The system of macroeconomic measurements now known as the flow-of-funds accounts was the invention of Morris A. Copeland.¹ Their character and content were fundamentally influenced by Copeland's methodology as an economist. The purpose of this paper is to examine these methodological roots and explore their connection to the accounts.

Throughout his long career as an economist, Copeland always proudly proclaimed his commitment to institutionalism.² For this reason, and because of his unswerving adherence to a natural science point of view, Copeland has never been fully accepted into the mainstream of economics.³ Ironically, neither is Copeland fully recognized today as an institutionalist. Nevertheless, an understanding of his particular institutionalist stance is essential to our purpose.

Copeland's brand of institutionalism could be called "quantitative," for in many ways he followed in Mitchell's footsteps.⁴ However, Copeland was clearer than Mitchell in setting out what would be required to make economics into the "evolutionary science" Thorstein Veblen called for, and Copeland placed more stress on the "qualitative" side of scientific economics than Mitchell did. But these are nonetheless distinctions of degree and not of kind. Copeland and Mitchell clearly belong to the same broad branch of American institutionalist thought of the twentieth century, and they have been parallel influences in the development of a more quantitative and scientific economics.

Copeland's Methodology

Copeland took pains to spell out the implications for economics of an evolutionary natural science point of view.⁵ For Copeland, economics and the other social

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sciences represented "a branch of that part of zoology concerned with man, a branch of functional anthropology."⁶ Human physiology and psychology deal with the individual: the functions of the various organs and the functioning of the human organism as a whole. But the social sciences are sciences of group behavior. For Copeland, therefore, propositions about individual motivation, preferences, and so forth, like those about DNA, the circulation of the blood, or the physiology of the human brain, are outside the boundaries of social science. Moreover, if "economics is a branch of zoology, it seems reasonable that economists should look more to biologists than to physicists for methodological guidance. Certainly Veblen did."⁷

Copeland summarized the requirements scientific hypotheses should meet in economics as follows:

1. Hypotheses or descriptive generalizations in economics should be "capable of empirical test. Scientific theories should not be mere truisms, or be so abstract as to be incapable of factual disproof. Moreover, a scientific hypothesis should be so formulated as to fit existing data. The economist will do well to put generalizations about price and cost into the terms that are used in keeping business records—into accounting terms."
2. Economics "deals with certain aspects of our social system not sharply marked off from the aspects with which other social sciences deal." Its formulations must therefore be consistent with hypotheses in the other social sciences. Further, its "generalizations must somehow make peace with the general theory of biological evolution. They can only be true of and relevant to some definitely specified periods of social evolution."
3. "The biological sciences do not confine themselves to description. They are normative as well as descriptive. Function is a normative, not a descriptive category."⁸

It goes without saying that much contemporary orthodox economic theory fails to satisfy these criteria. Copeland cites indifference analysis, for example, as lacking "empirical definiteness." It "fits the way people have behaved after the fact, but it fits any hypothetical past behavior that did not actually take place equally well" (the first point above).⁹ It is also doubtful that indifference analysis (or utility analysis) can be restricted as an explanation to one cultural group or era (the second point above). Copeland's methodological stance does not imply rejection of orthodox economic theory in toto, but it does imply rejection of a significant portion.

Copeland took the division of labor as the key feature of the economy as opposed to other social structures. The institutions that work to define and articulate specialization of production are, therefore, the special concern of the economist.¹⁰ Thus institutionalism involves description of the way institutions such as the money, exchange, price, wage, and accounting systems organize economic

activity in particular societies, past and present. Institutionalism has, then, "two main phases: one concerned with the process of cultural evolution; the other with the here and now."¹¹ The process of cultural evolution presumably requires eras, periods long enough for institutions such as exchange or the system of pecuniary incentives to become so well entrenched that they appear as "invisible" and "natural" stimulus-response patterns to the culturebound. As an example of a proper institutionalist treatment of the process of cultural evolution, Copeland cited Veblen's concept of "genetic processes of cumulative change," as illustrated by Veblen's examination of the cultural incidence of the machine process.¹²

The "here and now" phase of institutionalism takes place in a time period too short for significant changes in such fundamental human institutions. The questions institutionalists should pose in this shorter run are, according to Copeland: (1) What are the economic functions that need to be performed? (2) What are the institutions that help perform these functions, and how do they do so? (3) How might the performance of contemporary institutions be improved upon and what public policies are implied?¹³ The "here and now" phase of institutionalism necessarily involves the economist as economist in certain matters of appraisal, either as a kind of institutional pathologist or as an expert in describing a means to an end or formulating a generally accepted end, such as full employment or peace.¹⁴

The "here and now" phase and the cultural evolution phase of institutionalism cannot, of course, be sharply separated from one another. Two studies that Copeland praised highly involve elements of both. Copeland called the theory of cumulative expansion and contraction of business activity that Mitchell developed in *Business Cycles* "the first triumph of the empirical natural science method."¹⁵ And he described Clark's *Economics of Overhead Costs* as "much the greatest institutionalist contribution" to "realistic microeconomics."¹⁶ Both studies assume as a premise the historical relativity of economic truths. Mitchell saw the business cycle as a relatively recent development in business societies, and Clark traced the historical rise in the significance of overhead costs as part of his analysis of their effects. In these and other respects, these two studies satisfy Copeland's criteria for scientific investigation.

Copeland's Method in Practice

Further discussion of methodology proper will be less illuminating than an exploration of Copeland's practice. Although he devoted his last years to the "cultural evolution" phase of institutionalism, studying the origins of the money economy and other topics in prehistory,¹⁷ Copeland's main concern over most of his career was with the "here and now" phase. Three areas in particular occupied him extensively: (1) development of an empirical, largely statistical basis for economic analysis, especially within the framework of social accounting sys-

tems; (2) understanding business cycles, especially the way money and financial institutions fit into and contribute to these phenomena; and (3) evaluation of and improvement in the way economic institutions organize economic activity in the United States. Our focus will be primarily on the first two of these areas as reflected in his work on moneyflows.

At Mitchell's suggestion, Copeland was invited in 1944 by the National Bureau of Economic Research (NBER) to undertake an exploratory study of moneyflows in the United States. The choice was far from casual. Copeland's career to that point made him a logical candidate. With the encouragement of Walter Stewart, he had become "intensely interested" in business accounting as a graduate student.¹⁸ His interest in money and in empirical testing led him in the late 1920s to seek to determine the direction of causality in the equation of exchange, and this first attempt to define and test empirically the "money circuit" left him with grave doubts about the usefulness of the equation of exchange approach.¹⁹ Employment both before and during World War II, with various government agencies responsible for compiling and analyzing economic data had afforded Copeland wide knowledge of the kinds and nature of available economic statistics, and he had himself contributed to improvements in the conceptualization and presentation of national income accounts. Moreover, Copeland was prepared to devote the time required to solve the many intricate technical problems involved in the creation of a new social accounting system.

The exploration of moneyflows represented a high point in Copeland's career in several senses. Not only did it draw upon the extensive knowledge and experience he had acquired over more than twenty years of practice, the project also afforded him an opportunity to conduct a large-scale research operation in accordance with his methodological principles. The published version of his report, *A Study of Moneyflows in the United States*, stands as an example of the way Copeland believed economic science ought to be conducted. With the exception of a brief summary introduction, the volume opens with the technical explanation of the derivation of the various sectors and sector accounts. The substantive analysis of his findings only begins on page 211 and is titled "Some Tentative Interpretations." A third section, on sources and methods, is appended and runs in excess of two hundred pages. The structure of the book thus reflects Copeland's commitment to the conduct of empirical studies in such a way that a second investigator may replicate the findings.

Although Copeland's book may not have been "well packaged" for maximum professional impact, the Federal Reserve Board was persuaded to continue the statistical effort, and the moneyflows system is now maintained as the flow-of-funds accounts. So the moneyflows system became the fourth and youngest of the social accounting systems pioneered in this century: national income, balance of payments, input-output, and moneyflows.²⁰ These systems may very well prove to be the most lasting and influential contributions of the profession in this century.

Our present concern with moneyflows is principally with the way in which the study reflected Copeland's brand of institutionalism and his intellectual concerns as an economist.²¹ Copeland's study of moneyflows may be viewed as a full-dress, full-scale battle with the equation of exchange, one for which his articles of the late 1920s were preliminary skirmishes. The "main money circuit" that emerges from the system of moneyflows represents an alternative to the equation of exchange as a formulation of the nature and volume of "money work" in the economy. Moreover, it leads to a conceptualization of the relationship between adjustments in the ordinary transactions sphere (that is, transactions in goods and services plus net transfer flows) and in the financial sphere (that is, net funds borrowed or lent) that is antithetical to most versions of the quantity theory of money.

In a broader sense, the system of moneyflows provides an empirical basis for conducting analyses of changes in the level of economic activity in terms of simultaneous adjustments in ordinary and financial transactions. The accounts provide a much richer basis for macroeconomic analysis than Keynes's single-asset model could, and they make it possible to explain the way expansions and contractions of economic activity are financed and the way money and the banking system fit into the picture. It is lamentable to note that at this late date our most popular macroeconomic textbooks perpetuate misleading, or incorrect, explanations of where "the money comes from" to finance general economic expansion as well as of "where the money goes" when business contracts—despite Copeland's empirical demonstration of more than forty years ago and an ongoing system of flow-of-funds accounts.

Economists have tended to view the main money circuit of the economy in terms of a hydraulic analogy. For example, an increase in the money stock is visualized as an "opening of the spigot," increasing the flow (of money) to nonbank transactors. Implied in this conception are a number of pernicious notions for analyzing moneyflows: (1) that there is a significant lag between a turn of the spigot and the receipt of funds; (2) that the relevant money circuit is one in which goods flow one way and money the other; (3) that inflation is essentially no more than a situation in which "too many dollars are chasing too few goods"; (4) that new money can enter the circuit at the discretion ("injection") of a single transactor such as a central bank; and (5) that "hoarding" behavior somehow takes cash "out of circulation"—that is, that cash hoards and increases in cash hoards are somehow not available to finance the economic activities of others.²²

The moneyflows accounts reveal that these implications of the hydraulic analogy, individually or severally, are incorrect and misleading. As an alternative that is consistent with his moneyflow accounting measurements, Copeland proposes an electrical-circuit analogy. Money flows more like electricity than like a fluid because there are no lags between payment and receipt and because money as an asset is inseparable from its existence as an equal dollar debt (e.g., of the banking sector taken together with the monetary divisions of the Treasury). And

moneyflows transactions always involve a second party, one that ordinarily must agree to them. These features all clash with the implications of money conceived as a fluid.²³

Copeland's own analysis of the causes of cyclical fluctuations and the role of banks and the financial system is based on his "Key Features of the Money Circuit," a set of summary statements closely linked to his scheme of accounts.²⁴ In them he comes to focus on the discretion the various sectors have over their moneyflows. For example:

1. Each transactor has some discretion over its ordinary (nonfinancial) expenditures and receipts, especially over its ordinary expenditures.
2. Each transactor has some discretion over the size and composition of its loanfund balance (its financial assets and liabilities) and hence its cash balance. This allows transactors to borrow or liquidate financial assets in order to vary their ordinary expenditures more or less independently of their ordinary receipts.
3. The discretion exercised by transactors—both over ordinary moneyflows and over loanfund balances—is all mutually conditioning; exchange requires the cooperation of two parties.
4. The moneyflow account for the banking system is similar to that for other sectors; banks have discretion—within limits—to, for example, expand their currency and deposit liabilities by acquiring loans and securities. But in doing so the discretion of nonbanks is involved in selling the loans and securities and acquiring cash.

A "discretionary hypothesis" relating to the expansion and contraction of general economic activity follows immediately from these implications of the system of moneyflows. Some transactors are afforded discretion by virtue of cash balances or access to loan and security markets to increase or decrease their ordinary expenditures, despite the budget constraint imposed by current receipts. Copeland labeled those who draw down cash balances and other loanfunds to increase spending relative to receipts as "bulls." "Bears" are defined conversely as those who "stint and hoard." Transactors who neither spend nor stint aggressively are "sheep," for changes in their ordinary expenditures follow changes in their ordinary receipts (as in the consumption function for households). Whether aggregate income increases or decreases depends on whether bulls or bears predominate, and the behavior of "sheep" helps to explain the cumulative aspect of business expansions and contractions.

Copeland stressed that the volume of transactions in any given period represents a "readjustment of the previous volume, a readjustment that arises from the mutually conditioning choices of bulls, bears, and sheep."²⁵ This readjustment involves, in Copeland's view, simultaneous, interacting spheres. One is the sphere of ordinary expenditures and receipts; the other involves readjustments in

the loan and security markets as well as in flows of (net) funds through financial channels.

In the financial readjustment process (1) lenders and investors in securities and (2) borrowers, issuers of securities, and those who wish to liquidate portfolios, must get together on terms. Banks' ordinary expenditures and receipts are a negligible factor, but banks may influence the spending plans of others in the capacity of financial intermediaries. The discretion of the banking sector is asymmetrical in that banks may call or refuse new loans on their own, but borrowers or security sellers are required in order to expand bank credit.

Copeland's discretionary hypothesis, then, attributes the main motive force in business fluctuations to variations in aggregate demand. Asymmetry in the discretion over transactions of the various parties provides an institutional and empirical foundation for understanding that aggregate supply and aggregate demand are not coordinate in the short (cyclical) run. The discretionary hypothesis supports fully the neglect of aggregate supply in Keynes's *General Theory*, the neglect that neo-Keynesians have tried so hard to remedy.

Copeland once described Keynes's *General Theory* as "an expurgated version" of Mitchell's theory of business cycles.²⁶ The system of moneyflows accounts allows for a revised, unexpurgated version of the theory, one that accords priority to no sector *a priori* and one that analyzes simultaneously the interrelated changes in ordinary and in financial transactions. The understanding that emerges emphasizes the primacy of aggregate demand and the importance of money and other pecuniary institutions for explanations of business fluctuations in our kind of economy.

Copeland's Impact on Economics

The establishment of moneyflows as quarterly flow-of-funds accounts represented a widening of the empirical, social-accounting basis of contemporary economic analysis, and this may well turn out to have been Copeland's most important and lasting contribution to the profession from the standpoint of orthodoxy.

Although his discretionary hypothesis seems to underlie much of current business forecasting and the type of advice the Congress and the President receive from their economic advisers (other than the monetarists, of course), it is obvious at the same time that formal reasoning about business fluctuations has been dominated by much more abstract models. The thrust toward the creation of a macromodel based squarely on social-accounting equations and fitted behavioral equations, to which Copeland's discretionary hypothesis pointed, has been blunted in recent years.

In fact, a new kind of division of labor seems to have developed between those who seek to make empirical forecasts of aggregate economic activity and those who seek to build neat, deterministic macromodels in which economic behavior is specified in terms of utility and profit maximization and in which

coordinate demand and supply submodels are assumed in the determination of the level of income and employment. These latter models tend to be more concerned with Walras's Law than with social-accounting equations. Copeland's discretionary hypothesis has not been found wanting as a construct. Rather, it simply has not succeeded in the competition for the minds of academic macromodelists who continue the quest for determinism and mathematical precision and prefer conventional supply and demand analysis.

That Copeland was not unaware of these trends at the time he proposed the discretionary hypothesis is plain from a series of lectures he gave in India in 1951 titled "The Keynesian Reformation."²⁷ From the title alone it is clear that Copeland intended the essays as a corrective to Klein's *The Keynesian Revolution*.²⁸ Copeland does praise Keynes in these lectures, particularly his handling of time and expectations, his implicit definition of equilibrium as a concept not requiring the clearing of all markets, and the push he gave toward including more exogenous variables in economic models. However, as Copeland has pointed out elsewhere, one clear effect of Keynes's *General Theory* was to dampen institutionalist criticism of neoclassical model-building.²⁹ In this sense the effect was counterrevolutionary, and the changes Keynes introduced represented modifications of neoclassicism, not its rejection. Hence "reformation" is more descriptive than "revolution." Even this more modest appraisal may turn out to be an overstatement. In the late 1950s Copeland frequently suggested in his graduate courses at Cornell University that Keynes "was being brought back into the neoclassical church." If popular intermediate macroeconomics texts provide a reasonable test, the process is essentially complete today.

So Copeland's discretionary hypothesis, unlike moneyflows as a social-accounting system, did not "sell" to the profession as a whole. Given a strong and continuing conservative trend in the profession, it was inevitable that Copeland's conception of the way economic theory ought to be formulated would not square with the preferences of mainstream economists. If Copeland has not made a substantial dent in economic theory proper, then, the reason may well be that orthodox economics refuses to subscribe to the methods of a scientific economics as Copeland saw them. Moreover, the kinds of theory that do emerge from Copeland's scientific stance must seem to the orthodox "to be lacking logical precision; certainly they smack of 'imperfect approximation.'"³⁰

Copeland's approach was to adhere closely to the natural science point of view—that is, to insist on the use of observable variables, operational definitions, and other scientific procedures. This unrelenting stance put Copeland at variance with certain other branches of institutionalism quite as much as with standard economic theory. Students of Copeland will recall that his seminars were "Socratic" in the extreme. He never, to my knowledge, agreed "to explain" an economic concept. He merely asked questions, questions that, to be sure, probed deeply and critically into the received theory, questions that some of us are still trying to answer. Copeland did not believe in answering his own ques-

tions for us, presumably because he expected students to have the same confidence in their own mental powers that he felt in his and because he believed in the importance of having his students arrive at conclusions independently—in the importance of avoiding mere recitation of dogma.

Notes

1. Morris A. Copeland, *A Study of Moneyflows in the United States* (New York: National Bureau of Economic Research, 1952).

2. Note, for example, the subtitle of his collected papers: Chandler Morse, ed., *Fact and Theory in Economics: The Testament of an Institutionalism, Collected Papers of Morris A. Copeland* (Ithaca, NY: Cornell University Press, 1958).

3. The fact that he was elected president of the American Economic Association in 1957 represents an important qualification to this statement. He was also associated with the National Bureau of Economic Research during the period of its greatest influence, 1944–59. What one perhaps ought to say is that Copeland has had a very successful career as an economist despite the reluctance of the orthodox to accept his criticisms.

4. In a 1977 letter to me, Copeland wrote: "The book by Mitchell I refer to much the most frequently is *Business Cycles: The Problem and Its Setting*. But it was not through what he wrote that he influenced me most. A number of times when I was in New York I went to call on him at his house on West Twelfth Street to ask his advice on things I was working on" (October 30, 1977).

5. Copeland, "Economic Theory and the Natural Science Point of View," in Morse, ed., *Collected Papers*, pp. 37–53.

6. Morris A. Copeland, "On the Scope and Method of Economics," in Douglas F. Dowd, ed., *Thorstein Veblen: A Critical Reappraisal* (Ithaca, NY: Cornell University Press, 1958), p. 58.

7. *Ibid.*, p. 59.

8. Copeland, "Economic Theory and the Natural Science Point of View," in Morse, ed., *Collected Papers*, pp. 38–39.

9. Copeland, "On the Scope and Method of Economics," in Dowd, ed., *Thorstein Veblen*, p. 64, n. 12.

10. Morris A. Copeland, *Our Free Enterprise Economy* (New York: Macmillan, 1965), pp. 15–18.

11. Copeland, "Institutional Economics and Model Analysis," in Morse, ed., *Collected Papers*, p. 54.

12. Copeland, "On the Scope and Method of Economics," in Dowd, ed., *Thorstein Veblen*, p. 69.

13. Copeland, *Our Free Enterprise Economy*, pp. 7–8.

14. The role as pathologist arises from the institutionalism's description of the "functions" of institutions: "'Function' in this sense is to be distinguished from purpose. The function of an organ, for example, is a result that the observing scientist expects the organ 'normally' to bring about and in terms of which he appraises its behavior. It is not an end that guides or influences behavior." Copeland, "Psychology and the Natural Science Point of View," in Morse, ed., *Collected Papers*, p. 19.

15. Copeland, "Economic Theory and the Natural Science Point of View," in Morse, ed., *Collected Papers*, p. 50.

16. Copeland, "Institutional Economics and Model Analysis," in Morse, ed., *Collected Papers*, p. 66.

17. See Morris A. Copeland, *Essays in Socioeconomic Evolution* (New York: Vantage Press, 1981).

18. Copeland, *Moneyflows*, p. xiii.

19. See, for instance, the somewhat abbreviated version, Copeland, "The Equation of Exchange: An Empirical Analysis," in Morse, ed., *Collected Papers*, pp. 95–107.

20. Technically speaking, Leontief's input-output table is not closely related to the other three systems because it divides business establishments by type of product and thus abstracts from actual economic transactions and business accounting records.

21. For a description of the way the flow-of-funds accounts are currently set up see "A Quarterly Presentation of the Flow of Funds, Saving and Investment," *Federal Reserve Bulletin* (August 1959): 828; and "Revision of Flow of Funds Accounts," *Federal Reserve Bulletin* (November 1965): 1533.

22. This summary of implications of the hydraulic analogy is based on Copeland's "Note on the Quantity Theory," in *A Study of Moneyflows*, pp. 367–79.

23. Copeland has supplied a diagram of the money circuit conceived as an electrical diagram to substitute for the standard circular-flow diagram. It may be found in Copeland, *A Study of Moneyflows*, p. 245.

24. Copeland, *A Study of Moneyflows*, pp. 231–40.

25. *Ibid.*, p. 313.

26. Copeland, "The Keynesian Reformation," in Morse, ed., *Collected Papers*, p. 328.

27. Morris A. Copeland, *The Keynesian Reformation* (Delhi: Ranjit Printers and Publishers, 1952).

28. Lawrence R. Klein, *The Keynesian Revolution* (New York: Macmillan, 1947).

29. Copeland, "Institutional Economics and Model Analysis," in Morse, ed., *Collected Papers*, p. 59ff.

30. Copeland, "Statistics and Objective Economics," in Morse, ed., *Collected Papers*, p. 81.

JOHN C. DAWSON

Copeland as Social Accountant

(1991)

One of Morris Copeland's significant but less well-known roles was his contribution to the development of social accounting. I have in mind not his particular invention of the moneyflows accounts,¹ or flow-of-funds accounts as we now call them, but rather the general application of business accounting methods to aggregative economic measurement. What concerns me here is how Copeland became interested in business accountancy, how this knowledge affected his approach to aggregative statistics, and, in turn, how our conception of such measurement may have been influenced. These are my subjects of exploration.

Years ago when I was Copeland's graduate student at Cornell, he told me he had asked his undergraduate teacher at Amherst, Walter W. Stewart, what he should learn as a graduate student. Stewart had replied, "See if you can learn the difference between a debit and a credit." I believe this story to be significant: We have Copeland's testimony that he was persuaded by Stewart; he became intensely interested in accounting in graduate school.²

So who was this man, Walter Stewart, who, Copeland says, probably influenced his thinking more than he was clearly aware of. Stewart was not a publishing economist; he worked behind the scenes, as an adviser in government circles. But in this role he was very distinguished indeed.³

I cannot resist mentioning some high points in Stewart's later career. Stewart developed the first indexes of U.S. industrial production, published in 1921. He directed the Division of Research and Statistics at the Federal Reserve Board and wrote the famous 1923 Annual Report, which established monetary policy guidelines for many years. In 1928 he became the first economic adviser to the Bank of England. In later years he served on Eisenhower's Council of Economic Advisers and as chairman of the board of the Rockefeller Foundation. Not bad.

From John C. Dawson, "Copeland on Social Accounting." Unpublished paper prepared for the annual meeting of the American Statistical Association, 1991.

But for Morris Copeland, Walter Stewart was his undergraduate economics professor at Amherst.

Stewart's own formative years may well have been as a graduate student at Michigan in 1911-12. There he became persuaded by the strongly heterodox views of Henry Carter Adams in economics and Charles H. Cooley in sociology.⁴ Stewart also fell in with Walton Hamilton and David Friday, fellow graduate students who were thinking along similar lines. Michigan at this time seems to have been a creative hotbed of institutional economics. And these views coalesced in a remarkably able group of graduate students.

These institutionalists first of all agreed upon the rejection of "value theory" as the central core of economics and rejected its broadly laissez-faire implications. But they had a positive program as well. They had a strong focus on contemporary practical problems—problems of working conditions and unions, of railroad rates and industrial control, of corporations and property. They had an especially strong empirical and statistical bent. Further, the economy was to be seen as developing, as "in process," as influenced by the evolution of particular human institutions. Finally, economics needed to make itself congenial with related disciplines such as psychology, sociology, and the law. I list these planks in the institutionalist platform to suggest a context in which it was quite natural for Stewart to urge the study of accounting on his student, for this context was the economic philosophy to which Copeland was exposed at Amherst, both by Stewart and his senior colleague Walton Hamilton.

Accountancy had had a very significant place in the economics of the Michigan group. Earlier in his career, Henry Carter Adams had been chief statistician for the Interstate Commerce Commission. There he designed and championed a standard accounting system for the railroads. For him, accounting was to be the very instrument of social control.⁵ Later, at Michigan, Adams persuaded his student Friday of this view. And Friday later pioneered in the use of accountancy as an investigative tool for problems in taxation, public utilities, and monetary affairs. We can, I think, infer that Stewart had absorbed this point of view toward the field and in turn passed it on to Copeland. A proper empirical economist needed to know accounting.

Copeland moved on to Chicago for graduate economics study in 1918. There he worked under J.M. Clark, who had himself been strongly influenced by the Michigan group as well as by Veblen, Hobson, and Mitchell. So here was another sort of institutionalist conditioning.⁶ And we must remember that Chicago was Veblen's milieu. Clark later asserted with regard to Veblen that he "may be taken as the largest personal impulse behind the modern critical movements."⁷ Suffice it say here that after a thesis for Clark on institutional value theory, Copeland emerged as an "unreconstructed institutionalist."⁸

But to return to our theme, we recall that Clark's scholarly focus in these years was the economics of overhead costs, with special reference to railroads and public utilities.⁹ No doubt Copeland's budding interest in accountancy was

further stimulated by Clark's concern with business cost accounting and its uses for economics.

Our answer, then, as to why Copeland became so interested in accounting is largely a circumstantial one. We do not have testimony as to why Stewart urged its study upon Copeland. But the doctrines professed by Copeland's teachers make the idea a very congenial one. Here was an economic institution central to our type of economic organization. Here was an adjacent field closely related to the empirical understanding of business problems. It would repay study—as it does today. Copeland's first published article—in 1920—was a study of the accounting intricacies of financial budget-making and administration.¹⁰

I turn now to the task of tracing the influence of accounting on Copeland's approach to macroeconomic measurement. During Copeland's early research in the 1920s, this influence was largely dormant. His empirical instincts, however, were later to respond to the major outpouring of new economic statistics following World War I.

This outpouring of new economic time series for the United States was a remarkable one. The organization of business cycle data by Mitchell just prior to World War I must have been a major influence. The war itself—with the necessity for war production planning and price controls—pointed up our data shortages and the need for improved statistical organization. And I would add the major force of the empirical bent of the young institutionalists. Whatever the causes, we see between 1919 and 1922 the first presentation of balance of payments data, the wholesale and consumer price indexes, the industrial production index, data on employment and payrolls, new construction contracts, and our first estimates for national income—to name only high points.¹¹ As I say, a truly remarkable effort. Economists seemed willing to devote their energies to actually developing new statistical facts about the economy.

Copeland spent the early years of the twenties—he was at Cornell from 1922 to 1927—largely in rounding out his studies in institutionalist theory, including excursions into philosophy and psychology. But in 1927 he moved to the Research Division of the Federal Reserve Board and there his empirical interests came to the fore. He completed a statistical exploration of Fisher's equation of exchange, his first monetary analysis.¹² He also made his first detailed acquaintance with national income data and its analysis.¹³ However, in neither of these explorations do we find any significant use of accounting methodology or techniques.

So up to this point—say, around 1930—the business accountancy that Copeland had studied as a graduate student had been dormant in his scholarly work. But this was about to change, for during the 1930s Copeland published a series of articles on national wealth and income that placed heavy emphasis on their relation to business accountancy.¹⁴ These pieces dealt with defining national income and related concepts in the context of the statistical task of measuring them. For Copeland, these two tasks were inseparable. In my view, these articles mark the modern beginnings of the subject of social accounting.

In speculating about Copeland's newfound uses for accounting, it may be helpful to remind ourselves of two precedents of which he was well aware. It was Adam Smith, of course, who first made use of the business income statement in defining aggregate production and in inventing the circular flow of income.¹⁵ I can recall as a graduate student Copeland wondering out loud how Smith—this lecturer in literature and moral philosophy—how Smith had come by *his* accounting.

A second major connection was Irving Fisher. We think of Irving Fisher in terms of the equation of exchange. But a second and more fundamental aspect of Fisher's economics was his conceptual sketch of capital and income as these key economic concepts relate to business accounting.¹⁶ And Fisher goes on to show that social capital and social income are to be obtained by accounting consolidation of balance sheets and income statements. These roots are suggestive that the subject matter of national income will lend itself to accounting analogues.

What Copeland discovered was that national income problems can be thought about most clearly if they are formulated in accounting terms. In addition to offering clarity in formulating the conceptual issues involved, the accounting approach put the analysis into immediate contact with the problems of measurement, since the statistical raw materials consisted primarily of accounting records. In two of the three key articles, Copeland begins his discussion by first laying out pro forma balancing accounts. He then moves into the conceptual or measurement problems, using the social accounting framework.

It is not possible here to consider the many issues raised in the articles I refer to. Nevertheless, since I view these pieces as the birth of modern social accounting, I do wish to briefly characterize their approach. First, statements of social wealth and social income are close analogues of the individual balance sheet and the income statement. They portray society in terms of double-entry bookkeeping. They are used to appraise performance as well as to describe operation. Social income and social wealth are to be made objective concepts by specifying their method of measurement.

Following Adam Smith, society is conceived of as divided into two sectors: (1) the producing organization and (2) the ultimate sector. A key method of estimating consolidates income statements of all producing organizations according to the net value product method. The aggregative estimates can often be checked against one another by accounting techniques that match various conceptually equal totals of debits and credits. Solutions to the conceptual problems in the area must be such as to leave the system consistent from the accounting viewpoint.

In rereading these pieces, I became uncomfortably aware that "technical" does not necessarily mean "highly mathematical." The questions of whether "book additions to surplus" should be included in national income, or whether it should be on a cash or accrual basis, or how the physical increment to inventories should be valued, as these questions are there pursued, require considerable

sophistication in both statistics and accounting. I wonder how many of today's national income data users are aware of how these controversies turned out—that is, how many really understand the data they now use.

It would be difficult to determine objectively the influence Copeland's accounting emphasis had on subsequent developments in national income and product accounting. A great deal of what happened must have related to the early Income and Wealth Conference discussions and the movement of the Commerce Department into the estimating. But we note that during the late 1930s, Copeland was executive secretary of the Federal Central Statistical Board. His influence may well have been felt. In volume one of *Studies in Income and Wealth*, we find the keynote section, "Concepts of National Income," authored by Copeland. His keen but constructive controversies with Simon Kuznets are evident in this volume. We do know that later in 1947, when Richard Stone presented his national income design to the United Nations—the design that essentially became the United Nations' Standard National Accounts System—he stated, "this report approaches the study of national income from the point of view of social accounting." To demonstrate what this means, he refers to the Copeland articles we have been discussing.¹⁷

We come now to a look at Copeland's application of accounting to the area of moneyflows. Although he began putting money circuit measurements into social accounting terms in the 1930s, it was more than a decade later before he began estimates along the lines of the moneyflows study. So we are focused on the 1935–45 period in his thinking.

This same decade was, we may recall, a decade of great strides in national income and product accounting. Broadly, we may characterize this progress as the development of sector accounts, i.e., separate balancing accounts for the major GNP buying/income receiving sectors. This disaggregation of the "ultimate" sector account accompanied the Keynesian emphasis on the components of aggregate demand as the key determinants of the total product and income. Thus the new sector accounts quickly became the focus of aggregative economic analysis.

Copeland was, of course, in close contact with the national income and product developments of these years. But his own path in creating the moneyflows system was separate and unique. What was involved in his own "social accounting approach" to moneyflows?

First, his new approach involved an emphatic rejection of the equation of exchange framework or, as he came to refer to it, the hydraulic analogy.¹⁸ This involved a basic change in his view of the transaction. The equation of exchange, like our common sense, makes a categorical distinction between (1) flows of goods and services and (2) the counterflow of money. But in measuring these flows we observe that both types of flow are accounting debits and credits. Merchandise purchases turn out to be just as much a moneyflow as cash disbursements. So the observation of moneyflows comes down to observing both

aspects of the transaction as they might be recorded in the books of the transactor. Transactor accounting and the observation of moneyflows are thus inseparable.

Second, moneyflows involve two transactors. Each transactor has a simultaneous debit and credit. There are two key implications of this quadruple-entry concept. For one thing, it brings Copeland directly to the necessity of having groups of transactors to record moneyflows. So sector accounts become a key feature of the moneyflow accounts as they are in the national income accounts. But in addition, he comes to use a standard classification scheme for types of transactions. For any given transaction type (e.g., payrolls), the debits must equal the credits for the sum of all sectors—that is, the system becomes a matrix of balancing cross and down totals. This innovation is of first-class significance in the design of social accounting systems; technically it puts the moneyflows accounts substantially ahead of the national income and product accounts at this stage.¹⁹

Now, Copeland, unlike national income accountants, was assembling sector accounts with an analysis of moneyflows as the end in view. This meant, of course, that cash balances needed to be represented in the account. But his accounting conception of moneyflows forced him to conclude that cash balances are not the only balances that transactors use to do “money work”—that is, to cushion the time differences in their patterns of ordinary receipts and expenditures.²⁰ Trade credit is used much of the time for this purpose, as are other financial balances. So he was driven to the inclusion of the whole array of credit instruments in his system of accounts. In his book, Copeland refers to a kind of suppression of the financial element, both in national income and product accounting and in Keynes’s *General Theory*.²¹ The financial market facts are not directly represented. Such was not the case in his own design of aggregative national accounts.

With these preliminary remarks, let us now proceed to the type of social account that Copeland uses in the moneyflow system. As he states, “Because moneyflows arise out of transactions of individual transactors, they lend themselves to presentation in financial statement form.”²² His moneyflow statement was adapted from the sources and applications of funds statement of business accounting. Copeland once described this statement to me as a “grossed-up statement of balance sheet increments.” The “grossing up” refers primarily to the idea of expanding the retained earnings increment so as to include in the statement any desired level of revenue and expense detail. These data are rearranged and technically adjusted so that the financial statement for each sector shows general receipts and expenditures for some thirteen types of nonfinancial transactions, and a fourteenth labeled “net loanfunds obtained or placed.” This financing flow item is derived from the net increment to all of the sector’s financial assets and liabilities for which details are presented in the statement as well. The moneyflow system consists of eleven such standard sector accounts.

Although these social accounts are analogous to the firm’s sources and appli-

cations of funds statements, they have an entirely different analytical focus. Copeland intended his system to provide the data needed for a general, aggregative moneyflow analysis of the economic system, an analysis economists might associate with general equilibrium theory. However, he realized that an aggregative analysis would have to be tied in with the national income and product accounts. And he did so, providing condensed sector accounts that each contain a GNP expenditures item. And these accounts, in turn, he used in a trial analysis of the relationship of moneyflows to business fluctuations, with particular emphasis on the related financial market adjustments and the role played by banks. But I cannot pursue this important work here.

The great achievement was that, as Reifler says, Copeland had "pulled it off"—he had assembled estimates for this complex system. The moneyflow accounts were first reported on in May 1947—somewhat *before* the first publication by the Commerce Department of the national income accounts.²³

These moneyflow accounts, in my view, were pre-eminent achievements in social accounting for two key reasons: (1) They were organized in matrix form—with balancing transaction type as well as balancing sector accounts. This format is important both from the viewpoint of estimation and of analytical power. (2) The system not only deals explicitly with flows in all the financial instruments but also covers the territory of the national income and product accounts as well. It provides a social accounting framework to relate market developments in financial markets with those in the goods and services markets—a key task of aggregative economic analysis.

In this selective survey of his career, we have seen that Morris Copeland was greatly influenced by the winds of institutionalism that were sweeping through economics during his formative years at Amherst and Chicago. In particular, he was fired to master the adjoining field of accounting. Then as his interest in aggregative economic measurement came to the fore during the 1930s and 1940s, he increasingly resorted to accounting analogues and accounting techniques as he and his national income and wealth colleagues grappled with conceptual and measurement problems. One outcome was the beginning of social accounting—of the formulation of national income and product conventions in terms of balancing accounting statements and in consistent accounting terms. Then he turned in the 1940s to his own path, to a new borrowing from the accounting field in the creation of a new set of social accounts specially constructed to include the analysis of the operation of the financial system.

Looking at the whole, I believe economics benefited much from Copeland's cross-fertilization from a related field. Yet curiously I sense that many of today's social accountants pay scant attention to the accounting nature of their discipline. Perhaps we should still be listening, as did Morris Copeland, to Walter Stewart's voice urging us to "learn the difference between a debit and a credit."

Notes

1. Morris A. Copeland, *A Study of Moneyflows in the United States* (New York: National Bureau of Economic Research, 1952).
2. *Ibid.*, p. xiv. XIV.
3. Joseph Dorfman, *The Economic Mind in American Civilization* (New York: Viking, 1959), vol. 5, ch. XIV. This section of the paper is much indebted to this work.
4. *Ibid.*, vol. 3, ch. VII, and vol. 5, ch. XIV.
5. *Ibid.*, vol. 3, ch. VII, p. 173.
6. *Ibid.*, vol. 5, chs. XV and XVII.
7. *Ibid.*, vol. 4, ch. XIII, p. 358. Stewart himself had returned to Missouri after graduate study to work with Veblen.
8. See *ibid.*, vol. 5, ch. XVII. The label is Dorfman's.
9. J.M. Clark, *Studies in the Economics of Overhead Costs* (Chicago: University of Chicago Press, 1923).
10. Morris A. Copeland, "Seasonal Problems in Financial Administration," *Journal of Political Economy* (December 1920).
11. Dorfman, *Economic Mind*, vol. 4, ch. VII, pp. 200-204.
12. Morris A. Copeland, "Special Purpose Indexes for the Equation of Exchange for the United States, 1919-27," *Journal of the American Statistical Association* (June 1929), and "Money, Trade, and Prices—a Test of Causal Primacy," *Quarterly Journal of Economics* (August 1929).
13. Morris A. Copeland, "The National Income and Its Distribution," in *Recent Economic Changes in the U.S.*, vol. II, National Bureau of Economic Research (New York: McGraw-Hill, 1929).
14. Morris A. Copeland, "Some Problems in the Theory of National Income," *Journal of Political Economy* (February 1932); Morris A. Copeland, "How Large Is Our National Income?," *Journal of Political Economy* (December 1932); Morris A. Copeland, "National Wealth and Income—an Interpretation," *Journal of the American Statistical Association* (June 1935); Morris A. Copeland, "Concepts of National Income," *Studies in Income and Wealth*, vol. I (New York: National Bureau of Economic Research, 1937).
15. Adam Smith, *The Wealth of Nations* (New York: The Modern Library, 1937), bk. I, ch. VI.
16. Irving Fisher, *The Nature of Capital and Income* (New York: Macmillan, 1906), chs. IV-IX, and *Elementary Principles of Economics* (New York: Macmillan, 1921), chs. III-V.
17. Richard Stone, "Definition and Measurement of the National Income and Related Totals," appendix to *Measurement of the National Income and the Construction of Social Accounts*, Studies and Reports on Statistical Methods 7 (New York: United Nations, 1947).
18. Copeland, *Moneyflows*, ch. 12.
19. See *ibid.*, table 2, for a condensed presentation. At this time, both the U.S. and U.N. national accounts approach the matrix idea only with matched pairs of flows between sectors.
20. *Ibid.*, ch. 11, sec. 2.
21. *Ibid.*, ch. 12, sec. 4.
22. Morris A. Copeland, "Social Accounting for Moneyflows," *The Accounting Review* (July 1949): 255.
23. Morris A. Copeland, "Tracing Money Flows Through the United States Economy," *American Economic Review* (May 1947).

STEPHEN P. TAYLOR

From Moneyflows Accounts to Flow-of-Funds Accounts

(1991)

With this paper we move away from the personal history of Morris Copeland himself and look instead at the later life of the moneyflows system that he described in his 1952 National Bureau publication and that is his best-known work. Copeland's work had had strong Federal Reserve support from Winfield Riefler, who wrote an introduction to Copeland's *Moneyflows*, and from Ralph Young, then director of the Division of Research and Statistics at the Federal Reserve. Copeland had done the actual statistical work for his book, in the later 1940s, in office space of the Federal Reserve Board that had been donated to the project by the Board. When that work was largely completed and Copeland was ready to move on to the publication stage of his project, there was in Washington a passing on of the torch, so to speak, when the Fed decided to absorb into its own Research and Statistics Division the staff that Copeland had put together for his work and to continue the moneyflow work as a current and ongoing activity. Copeland had in effect used National Bureau seed money to insert an economic statistics operation into a Washington policy-making institution, and it has continued at the Fed for more than forty years since then.

The first ten or twelve years of that time were undoubtedly the most difficult for Fed management, and Ralph Young is to be singled out for a special award for having the patience of Job throughout the 1950s. During those years his moneyflows staff was groping from one level to the next to supply a coherent story in the group's own terms for policy makers in financial markets, and there were continual changes in form of numbers, analytic focus, and estimates, and in

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the course of these changes during the 1950s the system was gradually transformed from Copeland's moneyflows structure to something that connects differently to other statistical systems and differs in analytic approach. It was not clear what Copeland thought of these transformations, but I cannot believe that he approved of all of them.

In the first five or six years after Copeland, the Fed's moneyflows group was headed by Dan Brill, who had been Copeland's principal assistant in his statistical work. During those years the Fed's version of moneyflows went through certain changes of form to fit the staff's view of financial markets more closely, but the accounts stayed close to the main Copeland idea, particularly in including only actual, arm's-length transactions between separate parties, both nonfinancial and financial. This requirement meant consolidated statements for governments, banking, and business, and it meant excluding from the system all of the imputed items that are created in income-and-product accounting to gather into the totals forms of production and income that are not reflected in transactions. It also meant excluding claims on life insurance reserves and pension reserves and a variety of accruals that accountants write into company books.

The imputation list in income and product accounts is long. Nowadays it is spelled out in each year's July Survey of Current Business NIPA revisions as Table 8.9, but in the 1950s it was never so neatly summarized in one place. In the early Fed work, as in Copeland's, a very sizable part of the compilation work went into developing methods to divide among sectors the imputations that are in source data on nonfinancial transactions so they might be removed. Under Brill during 1952 and 1953 the group was active in short-term projections for Board purposes—in spelling out, that is, the financial market consequences of income-and-product projections for one or two years ahead—and here again a great deal of the projection work went into expunging imputations from the nonfinancial projections that were the start of the exercises.

Once the projections had been put onto a transactions basis, the financings were worked out in full matrix constraint, where each sector's receipts were required to equal its outlays and where for each type of transaction receipts were similarly forced to equal outlays. These projections may have been the first full macro outlooks anywhere in market economies that conformed to such a double constraint of sector and transaction account balances. These days flow-of-funds projections are common enough in many countries, and they are done at the Fed about eight times a year, but in 1952 a single one-year matrix of outlook consumed many large sheets of paper and many late-night hours of work, and it was a major program of several weeks.

Brill's group also produced in 1953 an innovative study of the growth of U.S. private debt since 1945. It reads strangely now, because the Fed was then already viewing with alarm the debt growth trends that were emerging from the 1940s and that would keep going far into the 1960s without raising serious problems. Those were the trends that by the 1970s had seemed to establish

settled relations to GNP activity but that were blown away completely by 1980s debt financing. The important point here is that the 1953 work was in stocks as well as in flows and in a variety of data sources and concepts. It was plain that Brill had already established his moneyflow group at the Fed in broad-scale financial analysis of a variety of forms and uses.

In 1955 the moneyflows work at the Fed came to a close of this first phase with publication of a full set of accounts, by sector and transaction type, in stocks and flows, with extensive derivation tables showing adjustments for sectoring, imputation allowance, and valuation effects. That book showed the structure changes the Fed had made from Copeland, and it covered 1939–53, a more recent period than Copeland's. It also inaugurated the change of name from "moneyflows" to "flow-of-funds" to get away from the confusion with money stock movements that bothered many readers of Copeland and to use instead a term common in business accounting. "Flow-of-funds" became the term that the accounts have been known by since then in the United States and in several other countries.

That 1955 volume, and Copeland's *Moneyflows* that it descended from, were part of a set of social accounting precursors for the United States that appeared within a few years of one another in the early 1950s. The others in the set were Raymond Goldsmith's three-volume *Study of Saving in the United States* (1955), an enormously detailed work financed by the Life Insurance Association, and *Individuals' Saving* (1954) by Irwin Friend with Vito Natrella, which described SEC procedures for current measurement of saving. In spite of their titles, both Goldsmith's and Friend's works were measuring capital transactions, not income less consumption, and in capital account the four publications were covering very much the same conceptual and statistical ground, even though they had very separate purposes.

There was much interaction: Copeland mentioned Goldsmith in his preface, Goldsmith mentioned Copeland in his, and Brill mentioned both Goldsmith and the SEC work in his debt study. There were nevertheless a great many differences among the four in structure, definitions, and measurement, and comparing one with another could take hours or days, even with the very ample notes that came with each of them.

For the United States, these were all, as I say, precursors of something else. At the time the outstanding distinction that could be seen between Copeland-Fed on the one hand and Goldsmith-Friend on the other was that the flow-of-funds system explicitly included nonfinancial transactions in the statistical structure in direct articulation with financial flows and stocks. For development of social accounts and macroeconomics this was a major step toward forms that appeared in later systems.

The movement toward systematized financial accounts at the macro level surfaced on the world level at the IMF's 1956 annual meeting, where there was a session on financial accounting around the world. The U.S. flow-of-funds ac-

counts were featured there, but the session also included an extraordinary taxonomy compiled by the Fund's Graeme Dorrance, a listing of national financial statistics on a worldwide basis that was unmatched for years to come except by his own later modifications. Also in 1957 there was a session at the December AEA meetings on flow-of-funds analysis, a subject that was continually raised in those days, usually in a quizzical tone by baffled economists. The two papers at the session were given by John Dawson and me, but I don't know how much we accomplished for the subject.

Meanwhile, back at the Fed, major changes were proceeding. After the 1955 flow-of-funds publication there was growing demand on the flow-of-funds group for a quarterly form of the accounts: Management wanted something that could be much more timely and current for Board purposes than a set of annual accounts that required most of a year to put together. By this time Dan Brill had left the flow-of-funds group to move on to other stages of his career. He was at the Fed for another fifteen years, concluding as Director of Research and Statistics. He always stayed in touch with this first of his Fed activities, but he also had many other things to do. (Later he completed his government career as an Assistant Secretary of the Treasury during the Carter administration.) From 1954 until 1961 Stanley Sigel was in charge of the flow-of-funds work, and it was under Sigel that the major changes began in flow-of-funds structure and practice at the Fed.

Developing quarterly accounts was the principal flow-of-funds activity at the Fed until August 1959, when the new system was published in the *Federal Reserve Bulletin*. The quarterlies included major and irreversible changes in the form of the Fed's system that pushed it much closer to the mainstream of macroanalysis and social accounting, and one could begin to see the relation here to Richard Stone's capital and reserve accounts that were in his landmark memo of 1947. It is these changes, more than those that followed, that may have let Copeland feel that moneyflows analysis had been lost somewhere along the way.

The changes were forced partly by practical considerations, because a great deal of the nonfinancial detail on imputations and forms of spending and receipts existed only on an annual basis. In those precomputer days the conversion of annual imputations into quarterly series was far too time-consuming to be a realistic possibility. This had a major effect on the form of nonfinancial transactions in the system: Gone were accounts for wages paid and received by sector, for interest paid and received by sector, and so forth. Instead there were statements of consumer income and consumption, business profits and investment, and the like that were based directly on NIPA aggregates in published quarterly form and that differed in structure from sector to sector. This meant no homogeneity across sectors in nonfinancial activity above the level of saving and capital formation, and as a result it meant that the flow-of-funds matrix—the defining form of flow-of-funds analysis—became very much truncated in its nonfinancial sections.

This led directly to a form of matrix and of sector analysis in which the totals

of saving and investment are pivotal, where, that is, for each sector the total of net current receipts equals, in a statistically perfect world, the total of capital formation and net financial investment. The identity here can be stated in several ways, just as the equation of exchange can, but the form that appeared in 1959 with the quarterly accounts—saving equals investment—is the one that brings flow-of-funds statistics directly into the social account structure that Stone described in 1947.

This is broadly the form that the accounts have had ever since 1959. At that time it raised major questions about integrating the accounts with NIPAs, and the first steps toward integration were hesitant: Accruals of life insurance reserves and pension fund reserves were brought into saving in a gingerly fashion as saving and as investment, and capital consumption began to appear as a component of gross saving. Tax accruals, on the other hand, were still omitted. It was not until 1965 that another set of changes was introduced into nonfinancial accounts that essentially integrated the accounts with the NIPAs. Some people contend that they are still not fully integrated, but the problem is in the meaning of "integrate." Flow-of-funds does show a variety of nonfinancial combinations in sector statements, some to reorganize BEA structures into forms that make financial analysis easier. The system adheres closely to the NIPA concepts of saving and investment, though, and the few variances in the matrix definitions are plainly spelled out in sector statements. The major one of these is treatment of consumer durables as a capital outlay by the household sector. Even in its almost-integrated form, however, flow-of-funds accounts show their moneyflow ancestry in a touchiness about some kinds of NIPA treatment, particularly the balance of payments entries for retained earnings on direct investment that are in both current-account balance and in capital account.

So the 1959 quarterly accounts were the genesis of the transformed flow-of-funds system. Depending on viewpoint, the new structure either incorporated income and product accounts and balance of payments statements as subsystems of the main structure, or alternatively it was simply an extension of the NIPA capital account into detail for domestic sectors and for forms of financial flow. For Jacob Cohen, who in 1972 did a major and important review of moneyflow work since 1947, "the breadth of Copeland's moneyflows has been substantially narrowed in the hands of the Federal Reserve and foreign account-makers." For Cohen the moneyflows concept should be the governing principle in social accounts, with extensive to-whom/from-whom information, and other forms of system would be abstracts from the moneyflow source.

Graeme Dorrance had a different view in his 1978 book on financial analysis at the macro level. For him the newer system was misnamed as flow-of-funds, since it shows only net changes in asset and liability positions, not transactions. Dorrance saw financial transactions as mainly a congeries of stock adjustments activities by the participants in markets, and held therefore that the net changes in positions that are in the accounts are the appropriate form of information for

financial work when put up against relevant income and product transactions.

Just three months after the quarterly accounts were published in 1959, the Income and Wealth Conference had a session titled "The Flow of Funds Approach to Social Accounting," and the papers in that session had a mixed relation to the new account structure. Copeland himself gave a paper at the meeting that showed in four different areas some analytic uses that flow-of-funds accounts could serve, using mainly the last moneyflow form of Fed numbers from the 1955 publication. For a consumer demand model he combined nonfinancial items into, in his words, "what the Federal Reserve Board calls the 'current surplus,' " so he was certainly trying out the new forms for his illustrations.

The 1959 Income and Wealth Conference was important in several ways, but as a whole it was remote from stock-adjustment views of financial flows of the form that Dorrance took for granted. Thirty years after that conference, the absence of stock relationships in the meeting seems strange, although I cannot remember my own attitude on the subject as of then. Over the 1960s stock adjustments took over as an analytic approach to financial flows for most purposes, perhaps led by attention to lifetime saving hypotheses by Modigliani and others and by the Brainard-Tobin work in their "Pitfalls" paper.

In my own work on projections at the Federal Reserve during the 1960s I became increasingly aware of stock relationships in working out a balanced outlook. On the one hand, financial flows integrate with nonfinancial flows to balance out transaction credits and debits for an individual, a company, a government, a sector, or a country. On the other hand, financial flows change the stocks of claims held by and against any group, and if those stocks are not on a random walk relative to income and spending, then the constraints on financial flows come from stock ratio preferences for assets and debts as well as from nonfinancial transactions, and the double relation is not easy to model.

The effects were particularly striking in longer-term financial projections—ten years or more—that both John Dawson and I worked out at various times at the Fed. Here the effects of projected financial flows on stocks of assets and debts can be astonishing, even when balanced with income and product. Both the totals of assets and debts and their structure can go to extreme ranges as the result of projected flows that seem reasonable enough, and when that happens, one needs to worry about carrying costs of those positions, risk-return relationships, and customary practice of lenders. Over the 1970s considerations like these were built into both short- and long-run outlooks, and they were valuable guides over the period. Financial flows could be seen to have an accelerator relation to nonfinancial activity that was parallel to the inventory accelerator and more reliable. Financial flows seemed to lead GNP fluctuations, but in the end they were evidently maintaining stocks in step with GNP. This was the time when Ben Friedman at Harvard was discovering that debt of nonfinancial sectors had a remarkably stable relation to GNP over sixty years, even when the structure of debt was changing drastically. It was also when Henry Kaufman started

mentioning stability of the "debt proxy," which is actually financial assets of private nonfinancial sectors.

But then came the 1980s. In 1981 Congress voted a tax reduction, and in 1982 Federal borrowing built up dramatically on top of a rate of private borrowing that showed no signs of a crowding-out effect. Although for the next few years the universal view was that real interest rates were too high in the United States, the leveraged-buyout and takeover activity of the decade chose to retire \$500 billion of business equities using several forms of borrowing, while consumer credit and commercial mortgages went skyward together with Federal borrowing. Along with these changes came extraordinary changes in forms and amounts of intermediation. The effect was that by the mid-1980s stock-flows relations in the data were in disarray: Demand for debt and for financial assets had gone into new territory, and there seemed to be no guidelines in the past about what would happen next. Some people, thinking in nonfinancial Keynesian rules, thought the Federal deficits and the balance of payments deficits were surely sustainable into an indefinite future, evidently not noticing the debt buildups and the carrying costs that were prospective current-account effects of the borrowing.

The mortgage debt from the 1980s turns out to have been sour indeed, and it is slowly being converted into even more Federal debt to the extent that the credit came from insured intermediaries. It is not clear now how much more damage there will be from the mortgage problem for lenders and the Federal budget, and it is also not clear whether the business takeover financing will become dangerous. And we certainly have no knowledge, finally, of whether stock-flow ratios will ever tend back toward pre-1980 levels.

The point in mentioning the 1980s here is that although flow-of-funds accounting has kept its structure reasonably up-to-date with the changes in financial practice that hurtle in on us, it has nevertheless no basis in itself for predicting outcomes of the present situation. Partly this is because it lacks distributional data as to who holds the assets and who owes the debts. To the extent that credit holders and debtors are the same people, there may have been simply a shift in preferred balance sheet structure since the 1970s, without consequences for future market stabilities. If lenders and borrowers are different, though, there's been a change toward a more brittle financial structure that is more dangerous. We all know cases where dealing in companies or real estate has sent assets off in one direction and debts in another, but at the same time it is also remarkable that takeover financing, in particular, has caused no serious financial problems yet. So there are severe problems in reading the aggregates these days that make analysis much more complicated than, say, in the 1950s.

The other form of current problem in flow-of-funds work is in the statistics, which are in a wretched state. There is no time here to go into the problem, but a combination of increasingly complicated financial practices, tight statistical budgets, and tired statistical operations has left Washington far out of touch with the mainstream of finance. Nonfinancial business, pension funds, and international

capital flows are a few of the outstanding cases of data hopelessly inadequate for their current tasks. Although there are new statistical programs in the Federal budget for the near future, I am surprised, from the viewpoint of macrofinancial analysis, at how little help can come to financial statistics from current proposals. There should be a chance to review, appeal, and modify for broader aims the schemes that are now on the table before the money is actually spent.

Statistical discrepancies in balance of payments and flow-of-funds accounts have been at levels over the past ten years—\$30 billion to 50 billion commonly unexplained—that make the 1950s accounts look unbelievably precise. The 1950s *were* a simpler world in financial markets, one where reports from a few strategic institutions in New York and from major corporations covered the picture well. We now have worldwide markets, many times as many players and intermediaries in the markets, much laundering offshore, and other transformations that don't begin to appear in standard old statistical sources.

This is then the strange conclusion that I must bring to this little survey of the post-Copeland years: After forty years, on the one hand, we've reached a stage where financial health is in poor shape domestically and across the world, where financial policy is critical to avoiding even more fallout of crippled debtors and lenders, and where integrated analysis of the problems would be more relevant than any time since the 1940s. On the other hand, we have flow-of-funds analysis that cannot explain how we reached the present state of asset and liability relationships over the 1980s and what the consequences of those relationships might be, all based on accounts that are crippled by lack of reliable and complete financial information. The problem is serious but not hopeless. I hope only that the energizing force to go at the problem does not require another 1929–33 financial condition to get people's attention.

Part III

Flow-of-Funds Didactics

Introduction to Part III

The teaching of flow-of-funds analysis in this volume began, of course, in Part I, with its presentation of the accounts and the illustrative data analyses. Part III aims to move along our understanding of the accounts and their possible uses. These readings are called didactic because they are for the most part telling us about or showing us how to use the system rather than actually using it. The more full-fledged applications of the accounts are reserved for Parts VI through VIII. But the present “teaching” pieces should extend our sense of what flow-of-funds is and what it can do in a variety of ways.

For analysts who are not familiar with accounting or for whom the “sources” and “uses” of funds concepts are troublesome, the Ritter article (reading 7) may be just the right way to move into the flow-of-funds accounts. Probably the easiest way to understand sources and uses is via balance sheet increments, and this is the approach Ritter takes. In his buildup of the accounts he is also attaching rough empirical meaning to key financial terms such as capital account, financial asset, borrowing, and deficit sector, and making clear the conceptual equalities involved, both sectoral and global. The whole is an exposition of admirable clarity.

In reading 1 Copeland gave us just a taste of how he saw the accounts being used to analyze business cycles in our economy. Here in reading 8 Copeland’s extended exposition of his “discretionary hypothesis” is presented. The hypothesis is built on the concept of a transactor’s discretion over its moneyflows. The idea of discretion is intimately related to causation in moneyflows because in order for a transactor to cause changes in its moneyflows, it must be able to influence the flow—that is, to have discretion over it. The analysis leads to empirical rules for observing which sectors are taking the initiative in cyclical fluctuations in moneyflows, a major contribution to business cycle theory. Copeland then applies his hypothesis to his own moneyflow data. This analysis is taken from Copeland’s moneyflows book, where both the form of the accounts and the terminology differ from those we now use. The glossary of Copeland’s key terms at the end of this selection may be of help to the reader.

During the 1960s two developments characterized flow-of-funds analysis: financial projection work and the empirical specification of the saving-investment

process. The next two readings reflect these developments. Stephen P. Taylor presents a sketch of how flow-of-funds projections were done at the Federal Reserve Board. As he points out, the essence of such projections was to produce a projected matrix. The novelty of the new projection form was the necessity of forcing accounting balances for all sectors and transaction types simultaneously and in turn the impacts that this forcing had on the substance of the projection. For the first time a system of accounts *as a whole* was being used in projection work. Practitioners will sense that the substantive judgments embedded in such projections lie closer to "current financial analysis" than to econometric behavior relations. An example of such a projection is presented later in reading 38.

Our first contact with the saving-investment process—the process by which saving flows through financial channels into real investment—was Taylor's discussion of financial intermediation and the format of the flow-of-funds summary tables in reading 2. A similar scheme is presented here but with keys permitting us to locate each financial flow directly on a condensed flow-of-funds matrix. Such an exercise clarifies the process and shows a useful way to interpret the matrix table. The scheme presented here is later used in reading 32 and reflects the U.S. financial system in the 1950s. Since then, as the U.S. financial system has become more complex, it has become increasingly difficult to quantify intermediation. Nevertheless, the saving-investment process scheme remains a basic conceptual guide for most flow-of-funds analysts.

Reading 11, by James S. Earley, Robert J. Parsons, and Fred A. Thompson, is one of the few that followed in Copeland's analytical footsteps, using social accounting materials to point toward a general financial theory. For our purposes the model transaction sequences used to develop their theory provide a useful exercise in keeping track of transaction entries for all sectors. Their theory is grounded in a fourfold analysis of the sources of funds available to finance a sector's expenditures. Having formulated their theory in flow-of-funds account terms, the authors can proceed directly to a correlation analysis to support it. I am in strong sympathy with the authors' approach, but in my view their language puts too much emphasis on financial sources of funds as the *cause* of expenditures on goods and services.

One aim of this piece is to attack monetarist doctrine. Although the authors' empirical case has not been included here, their social accounting approach itself carries with it two notable points. First, the fact that money is used to pay for expenditures does not imply that money has *financed* them. Expenditures are financed by sources of funds. Second, it is bank *credit* increases (not money supply increments) that can provide the sources of funds to finance goods and services expenditures. To trace the bank impact on expenditures, the social accountant focuses on bank *credit*.

This Part's remaining selection is a presentation of financial programming as developed during the past several decades and used extensively by the Interna-

tional Monetary Fund (the Fund). The expression "financial programming" has here a special meaning, referring to a set of methods used by the Fund to design financial policy measures that are incorporated into Fund-supported "adjustment programs" for developing countries.

These programs have a strong social accounting base, since the end product consists of a set of projected sector accounts. The scheme involves three main accounts: the balance of payments account, the banking system account (central bank plus deposit banks), and the central government sector account. But these three imply a residual "private sector" covering the remainder of the economy. The four together comprise a comprehensive social accounting matrix, which includes condensed financial flow data. The reader can examine this matrix and its assembly in reading 14.

Financial programming involves an analysis that traces financial forces to the banking system or even to the central bank itself. For example, consider the following crude outline: The balance of payments is projected and the implications for its overall balance are carried to the net foreign assets of the banking system—as rest-of-the-world demand for bank credit. A similar projection is carried out for the central government, and its residual credit demand is also seen as being met by the banking system. However, no analogous procedure is carried out to determine the private sector's demand for bank credit. Instead, a quantity theory relation is used (given a target GDP) to project the quantity of money and derive the total expansion of the banking system. From this the flow of private domestic bank credit is derived residually. As the Fund description suggests, these programs quite generally imply a policy need for fiscal restraint and restraint of private domestic bank credit in order to reduce payments deficits or inflation.

The Fund's programming method has been vigorously criticized.¹ The doctrinaire use of the quantity theory, both as a theory of inflation and in the determination of the target quantity of money, is often objected to. Another important criticism relates to the Fund's causal interpretations of various social accounting equations. For example, the Fund often refers to maintaining a "desirable balance between real income and real absorption." The expression interprets the familiar social accounting equation:

$$Y = C + I + G + X - M$$

where Y is output or real income, $C + I + G$ is absorption, and $X - M$ is the current account balance. An excess of absorption over real income is necessarily accompanied by an equal balance of payments deficit. Now it is very easy to jump from this social accounting statement and assert, *based on the equation*, that an excess of absorption will *cause* an equal balance of payments deficit—as the Fund holds.² But perhaps the payments deficit *causes* the excess of absorption. The social accounting equation by itself cannot tell us which causal view is correct. That knowledge must come from an economy.

Notes

1. See, for example, Lance Taylor, *Varieties of Stabilization Experience* (Oxford: Clarendon Press, 1988), and Lance Taylor, "IMF Conditionality: Incomplete Theory, Policy Malpractice," in Robert J. Myers, ed., *The Political Morality of the International Monetary Fund* (New York: Transaction Books, 1987).

2. See, for example, International Monetary Fund, *Theoretical Aspects of the Design of Fund-Supported Adjustment Programs*, Occasional Paper 55 (Washington, DC: International Monetary Fund, 1987). On p. 5: "The [balance of payments] current account shows a surplus if income exceeds absorption and a deficit in the reverse case. This information illustrates the important principle that a current account deficit can be reduced by a decline in absorption (relative to income) . . ." On p. 6: "It follows from the definition of the current account balance as the difference between income and absorption that a desired reduction in a current account deficit can be achieved through some combination of increasing output and reducing absorption."

LAWRENCE S. RITTER

A Framework for Financial Analysis

(1963)

Flow-of-funds accounting is used to analyze borrowing and lending in financial markets. It traces financial transactions by recording the payments each sector makes to other sectors and the receipts it receives from them—just as a family might keep track of its money by recording all its payments and receipts.

Flow-of-funds accounting is useful in many ways. It provides a useful framework for analyzing what happens in various financial markets. It also can be thought of as tracing the financial flows that interact with and influence the nonfinancial economy. It records the maze of financial transactions underlying real saving and investment.

To appreciate all these implications, however, we will first have to learn what flow-of-funds accounting is all about. Specifically, it is a record of payments between and among various sectors. This is done via sector “sources and uses of funds” statements, which is what most of this chapter is devoted to explaining. Let us begin by seeing how a typical sector “sources and uses” statement is constructed.

A Generalized Sector Income Statement

A sector “sources and uses of funds” statement is nothing more than the integration of its income statement with its balance sheet. Taking first things first, a simplified income statement, general enough to apply to any sector, would look something like the following:

Reprinted, with permission, from Lawrence S. Ritter and William L. Silber, “Flow of Funds Accounting: A Framework for Financial Analysis,” ch. 26 in *Principles of Money, Banking, and Financial Markets* (New York: Basic Books, 1986), pp. 465–77. This chapter is a revision of Lawrence S. Ritter, “An Exposition of the Structure of the Flow-of-Funds Accounts,” *Journal of Finance* vol. 18, no. 2 (May 1963).

Figure 7.1 A Generalized Income Statement for a Single Sector

USES OF FUNDS (ON CURRENT ACCOUNT)	SOURCES OF FUNDS (ON CURRENT ACCOUNT)
Current expenditures	Current Receipts
Saving (Addition to Net Worth)	
$\Sigma = \Sigma$	

An income statement like the above merely lists a sector's current receipts during a period of time as a source (inflow) of funds, and its current expenditures as a use (outflow) of funds. Current receipts differ depending on which sector is involved; they consist mainly of wages and salaries for the household sector, sales receipts for the business sector, and tax revenues for the government. Similarly, the composition of current expenditures also differs, depending on which sector we are looking at.

In all cases, however, one sector's payments become another sector's receipts; for example, tax payments, a major *use* of funds for households and business firms, become tax receipts, a major *source* of funds for the government. As we shall see, it is this mutual interaction that gives the eventual flow-of-funds matrix its interlocking nature.

Saving, on the left-hand side, is defined as any excess of current receipts for a sector over and above its current spending. It is the same as our earlier definition: Saving equals income minus consumer spending. When it involves the government sector it is usually called a budget surplus, and when applied to the business sector it is frequently labeled either retained earnings or addition to net worth. In any case, since it is defined as the difference between current receipts and current expenditures, it is the balancing entry on an income statement. Thus summation equality signs are at the bottom of Figure 7.1.

A Generalized Sector Balance Sheet

Let us leave income statements for a moment and move over to balance sheets. Income statements show current receipts and expenditures over a *period* of time (say, during the year 1987), whereas a balance sheet shows not receipts and expenditures but assets and liabilities, and not over a period of time but at an *instant* in time (say, on December 31, 1987). A simplified balance sheet, general enough to apply to any sector, would look something like the following:

Figure 7.2 A Generalized Balance Sheet for a Single Sector

ASSETS	LIABILITIES AND NET WORTH
Financial Assets	Liabilities
a. Money	
b. Other	
Real Assets	Net Worth
$\Sigma = \Sigma$	

As with income statements, the principal difference between the balance sheets of different sectors is in the characteristic items that appear under each heading—consumer durable goods such as furniture and automobiles are typical real assets for consumers, inventories and capital equipment are typical real assets for business firms, and so on. Also, like income statements, balance sheets must balance, in this case because the net worth entry is defined as the difference between total assets and total liabilities. Thus our simplified balance sheet also contains summation equality signs.

On the balance sheet above, assets are divided into two broad categories, real and financial. A *real* asset, such as a car or a calculator, appears on only one balance sheet, that of its owner. A *financial* asset, however, such as money or bonds, always appears on two balance sheets: that of whoever owns it (as an asset), and that of whoever owes it (as a liability). This is because every financial asset is a *claim* by someone against someone else—an IOU of some sort—such as a government bond (an asset to whoever owns it, a liability of the government) or a bank deposit (again an asset to the owner, a liability of the bank).¹

While only *financial* assets appear on two different balance sheets, *all* liabilities do, because all liabilities—by definition—represent debts owed to others. Thus any time a liability is listed on anyone's balance sheet, a corresponding financial asset must be rung up on some other balance sheet.

Converting Balance Sheet Stocks to Flows: Saving and Investment

To analyze financial trends during a year, we need data on flows over a period of time, not stocks on a balance sheet at an instant in time. But all is not lost. We can convert balance sheet stocks (of goods or of money) into flows by comparing two balance sheets for the same sector, two balance sheets “snapped” at different times. For example, we can take the balance sheet of a household on December 31, 1987, and then again on December 31, 1988. By comparing them, and seeing what *changes* have taken place in each entry, we can translate stocks into flows; we can tell how much furniture was purchased or how much cash was accumulated *during the year* 1988.

Going back to our simplified balance sheet, Figure 7.2, let us take the bottom pair of entries, real assets and net worth—ignoring financial assets and liabilities for the time being—and see how we can convert those stock figures, snapped at a moment in time, into flows covering a period of time. The change (Δ) between two dates could be displayed like this:

Figure 7.3 A Partial Sector Sources and Uses of Funds Statement, on Capital Account

USES OF FUNDS (ON CAPITAL ACCOUNT)	SOURCES OF FUNDS (ON CAPITAL ACCOUNT)
Δ Real Assets (Investment)	Δ Net Worth (Saving)

Since Figure 7.3 is derived from only part of the balance sheet, it need not balance, so there are no summation equality signs at the bottom. Notice also that the column headings are different from those in Figure 7.2: "Assets" and "Liabilities and Net Worth" have been replaced by "Uses of Funds" and "Sources of Funds," the same as in the income statement (Figure 7.1). Now, however, they refer to uses and sources of funds on *capital* rather than current account—that is, to long-term uses and sources instead of short-term ones.

On the *uses side*, the change in real assets refers to capital expenditures, as contrasted with an income statement's current expenditures. Capital expenditures involve the purchase of *real* assets with an expected useful life of a year or more; the term is synonymous with real investment spending (or simply *investment* spending), as economists use that term.² Such capital expenditures are not included in an income statement; in accordance with conventional accounting practice, income statements are confined to current expenditures—the purchase of assets with an expected useful life of less than a year.

A distinction has to be made between "investment" spending as economists use the word (it always refers to the purchase of *real* assets with a useful life of a year or more, such as houses or machine tools), and the use of the word in general conversation, where it often refers to the purchase of *financial* assets, such as stocks or bonds. When we say simply investment, we have reference to buying real assets; if we want to refer to the purchase of financial assets, we will say, explicitly, financial investment.

On the *sources side*, the change in a sector's net worth during the period is exactly the same thing as "saving" on its income statement covering that time interval. This deserves a word of explanation, since it is not immediately obvious (even though the fact that "saving" is frequently labeled "addition to net worth" should provide a clue that they are one and the same). On a balance sheet, net worth is defined as equal to a sector's total assets minus its total liabilities. A change in net worth must therefore equal any change in total assets less any change in total liabilities. On an income statement, in contrast, saving refers to an excess of current receipts over current expenditures. But any excess of current receipts over current expenditures (flows) must imply a resulting buildup of total assets or a reduction of liabilities, or some combination of the two. Conclusion: Saving on a sector's income statement must become an equivalent change in net worth on its balance sheet. Put somewhat differently, as a "use" of funds on current account (on the income statement), saving means *not* spending. It means retention or accumulation. As such, it represents an addition to one's wealth or net worth and becomes available as a "source" of funds for capital account.³

Since the statement on Figure 7.3 is derived from only part of the balance sheet and thus does not have to balance, it follows that an individual unit or sector may or may not invest (i.e., buy capital goods) just equal to its current saving. It may save more than it invests, or invest more than it saves. If a unit or

sector invests an amount equal to its current saving, it is called a balanced budget sector. If it saves more than it invests, it is called a surplus sector, and if it invests more than it saves, it is called a deficit sector.⁴ (Read this paragraph again—these will be useful concepts later on.)

How could a sector invest more than it saves? One way is simply to borrow enough to finance its deficit, which brings us to the other pair of balance sheet entries—liabilities and financial assets.

Converting Balance Sheet Stocks to Flows: Borrowing, Lending, and Hoarding

So far we have ignored the possibility of changes in liabilities and financial assets, the remaining entries on Figure 7.2, our generalized sector balance sheet. Such changes between two balance sheet dates would look like this:

Figure 7.4 A Partial Sector Sources and Uses of Funds Statement, on Capital Account

USES OF FUNDS (FINANCIAL, ON CAPITAL ACCOUNT)	SOURCES OF FUNDS (FINANCIAL, ON CAPITAL ACCOUNT)
Δ Financial Assets Other than Money (Lending) Δ Money (Hoarding)	Δ Liabilities (Borrowing)

Since the account on Figure 7.4, like that on Figure 7.3, is derived from only partial balance sheets, it need not balance and thus contains no summation equality signs. But whereas Figure 7.3 dealt with nonfinancial or “real” sources and uses of funds, Figure 7.4 is concerned with *financial* transactions—with *borrowing* (an increase in outstanding liabilities) as a source of funds, and with *lending* (an increase in holdings of financial assets other than money) and *hoarding* (increased money holdings) as uses of funds.

Strictly speaking, we should separate short-term financial transactions from long-term, comparable to our distinction between short- and long-term spending on real assets. However, in flow-of-funds accounting such distinctions are rarely made with respect to financial transactions, and all borrowing and lending, regardless of duration, are typically considered as on capital account.

The three possibilities in Figure 7.4—borrowing, lending, and hoarding—do not exhaust all the potential financial sources or uses of funds open to a sector. For instance, another possible financial *source* of funds, in addition to borrowing, is selling some holdings of financial assets. Still another source of funds is *dishoarding*. And an additional possible *use* of funds would be to repay one’s debts. These alternatives do not appear in Figure 7.4 because only *net* changes are considered there, and it is implicitly assumed that they are all positive.

By convention, if the net change in any entry turns out to be negative over a period, it is kept on the side where it presently appears in Figure 7.4 but preceded by a minus sign. If the net change in financial assets for a sector turns out to be minus—for example, as when a person liquidates some government bonds—it would be recorded on the uses side but preceded by a minus sign and referred to as a negative use of funds. But a negative use is actually a source of funds—another useful concept.

A Complete Sector Sources and Uses of Funds Statement

Believe it or not, if we string together everything we've done so far we will have before us, in all its pristine glory, a complete sector sources and uses of funds statement, Figure 7.5.

Figure 7.5 A Complete Sector Sources and Uses of Funds Statement

USE OF FUNDS		SOURCES OF FUNDS	
Current Expenditures		Current Receipts	
Saving (addition to <i>NW</i>)	$\Sigma = \Sigma$		
ΔRA (Investment)		ΔNW (Saving)	
ΔFA (Lending)		ΔL (Borrowing)	
ΔM (Hoarding)			
	$\Sigma = \Sigma$		
	$\Sigma = \Sigma$		

Above the dashed line is the income statement; below the dashed line, the changes in the balance sheet. Since the income statement must balance, as must the changes in the balance sheet, the summation of all the sources must equal the summation of all the uses of funds, and therefore we have several summation equality signs.

We are now able to define more precisely what we mean by a sector's sources and uses of funds:

Sources of funds consist of (a) *current receipts*; (b) any *increase in a liability* item (borrowing); or (c) any *decrease in an asset* item (selling off assets, dishoarding).

Uses of funds consist of (a) *current expenditures*; (b) any *increase in an asset* item—increased holdings of real assets (investment), of financial assets (lending), or of money (hoarding); or (c) any *decrease in a liability* item (debt repayment).

We could simplify the account in Figure 7.5 by eliminating current receipts from sources and current expenditures from uses, taking only the difference between them—saving—as a source of funds (if positive, or as a use if negative).

That is what we have, in effect, if we look only below the dashed line (which is the way the flow-of-funds accounts are published by the Federal Reserve Board).

The requirement that everything below the dashed line must balance means that each sector's investing + lending + hoarding must equal its saving + borrowing. As we know, however, a sector might save more than it invests (a surplus sector) or invest more than it saves (a deficit sector). If it does have a discrepancy between its saving and its investing, this necessarily implies a corresponding differential between its *financial* sources and uses of funds. To be more specific: A surplus sector, with saving greater than investment, *must* dispose of its surplus by lending, repaying debts, or hoarding (building up its cash holdings) in an amount equal to its surplus. And a deficit sector, with investment in excess of its saving, *has to* finance its deficit by borrowing, selling off financial assets, or dishoarding (running down its cash holdings) in an amount equal to its deficit.⁵

These conclusions flow from the fact that below the dashed line, as well as above it, the sum of all of a sector's uses of funds must equal the sum of all of its sources. Putting the same thing rather formally:

For any one sector:

$$\text{investment} + \text{lending} + \text{hoarding} = \text{saving} + \text{borrowing}$$

So if:

$$\text{saving} > \text{investment}, \text{ then } \text{lending} + \text{hoarding} > \text{borrowing}$$

And if:

$$\text{investment} > \text{saving}, \text{ then } \text{borrowing} > \text{lending} + \text{hoarding}$$

The Flow-of-Funds Matrix for the Whole Economy

Early in this chapter we said that flow-of-funds accounting records payments between and among sectors via sector sources and uses of funds statements. Since one sector's payments become another sector's receipts, when we put all these individual sector statements together we get a flow-of-funds *matrix* for the economy as a whole, an interlocking grid that reveals financial relationships among all the sectors. When the flow-of-funds matrix was first published by the Federal Reserve in 1955, it contained the complete statements for each sector in the form of Figure 7.5 above. Since 1959, however, it has consisted of only partial sector sources and uses statements, namely that part of Figure 7.5 below the dashed line. Current receipts and current expenditures are not shown explicitly, but they are implicitly included in that the difference between them—saving (or dissaving)—is there.

Figure 7.6 Flow-of-Funds Matrix for the Whole Economy

	Sector A		Sector B		Sector C		All Sectors	
	U	S <i>s</i>	U	S <i>s</i>	U	S <i>s</i>	U	S <i>S</i>
Saving (ΔNW)								
Investment (ΔRA)	<i>i</i>		<i>i</i>		<i>i</i>		<i>I</i>	
Borrowing (ΔL)		<i>b</i>		<i>b</i>		<i>b</i>		<i>B</i>
Lending (ΔFA)	<i>l</i>		<i>l</i>		<i>l</i>		<i>L</i>	
Hoarding (ΔM)	<i>h</i>		<i>h</i>		<i>h</i>		<i>H</i>	
	$\Sigma = \Sigma$		$\Sigma = \Sigma$		$\Sigma = \Sigma$		$\Sigma = \Sigma$	

NOTE: The small letters within the matrix represent the data for sector saving (*s*), investment (*i*), borrowing (*b*), lending (*l*), and hoarding (*h*) and are placed in the appropriate space where such data would be entered. The capital letters similarly represent the aggregate sum totals for the whole economy. Thus $s + s + s = S$, $i + i + i = I$, etc. (Roman "U" and "S" represent uses and sources of funds.)

Assuming a total of three sectors and omitting some detail, the flow-of-funds matrix appears essentially as in Figure 7.6.

This matrix is nothing more than the placing of the sector sources and uses statements side by side, each in the form of that part of Figure 7.5 below the dashed line. The resulting matrix forms an interlocking self-contained system, showing the balanced sources and uses of funds for each sector; interrelations among the sectors; and the aggregate totals of saving, investment, borrowing, lending, and hoarding for the economy as a whole.

For each individual sector, as we know, its investment + lending + hoarding must equal its saving + borrowing. Since that is true for each individual sector, it is also true in summation for all the sectors taken together—that is, for the economy as a whole.

In addition, something else is true for the economy as a whole that need not be true for any one sector taken by itself: *Saving must equal investment.*

For the whole economy:

$$\text{investment} + \text{lending} + \text{hoarding} = \text{saving} + \text{borrowing}$$

But since one sector's financial asset is another sector's liability:

$$\text{lending} + \text{hoarding} = \text{borrowing}$$

Therefore:

$$\text{investment} = \text{saving}$$

The conclusion that saving must equal investment applies only to the entire economy taken in the aggregate, not to any single sector taken by itself. As we have seen, any single sector may save more than it invests, or invest more than it

saves. But since saving must equal investment for the economy as a whole, it follows that for each sector that saves more than it invests there must, somewhere, be other sectors that invest correspondingly more than they save. This is true not only because the economy-wide total of saving must equal investment, but also because a surplus sector must dispose of its surplus, as we have seen, by lending, repaying debts, or hoarding an amount equal to its surplus. This in turn implies the existence of deficit sectors to borrow, reduce their financial assets, or dishoard.

Similarly, deficit sectors, which invest more than they save, necessarily imply the existence of surplus sectors. A deficit sector must finance its deficit by borrowing, selling off financial assets, or dishoarding. This in turn implies the presence of surplus sectors to do the lending, buying of the securities, or hoarding.

Notes

1. A complication arises in this connection with respect to corporate equities (corporate stocks), because they are financial assets to whoever holds them but are not, legally, liabilities of the issuing corporation. For most purposes, the simplest way to handle this is to assume that corporate stocks and bonds are roughly the same thing, despite their legal differences, and treat them both as liabilities of the corporation.

A related problem, which also remains unresolved, is that both bonds and stocks are traded on organized markets and change in price, so they may be valued differently by the holder and the issuing corporation. For example, a \$100 bond issued by a corporation may rise in price to \$120; to the holder it is now a \$120 financial asset, but to the corporation it is still a \$100 liability. The difference is capital gains to the bondholder, although the bondholder receives no funds inflow unless the bond is sold.

2. Real investment can be recorded on either a net or a gross basis, depending on whether or not depreciation expense is deducted.

3. As with investment, saving can be measured on a net or a gross basis, depending on whether or not depreciation is deducted. It should be noted that even if depreciation is deducted, so that saving is measured on a net basis, depreciation will still be a source of funds for capital account, since it represents a noncash "expense" rather than an actual current outlay of funds.

4. Alternatively, a surplus unit is one that spends (on consumption plus real investment) *less* than its current income, and a deficit unit is one that spends *more* than its current income.

5. A deficit sector might also finance its deficit by issuing new money. However, only two sectors are legally able to exercise that unique option—banks (by creating demand deposits) and the government (by creating dollar bills). If they did so, it would be entered on their sources and uses statement as an increase in their liabilities (borrowing), because while money is an asset to whoever owns it, it is a liability of whoever issues it.

MORRIS A. COPELAND

Moneyflows and Business Fluctuations

(1952)

In this chapter we attempt to interpret the moneyflows and loanfund balances¹ accounts, giving particular attention to cyclical expansions and contractions in moneyflows, their relation to expansions and contractions in gross national product, and the role of changes in loanfund balances in these business fluctuations. In the course of this interpretation we offer two groups of proposals looking toward a partial reformulation of monetary theory. In the first group of proposals we believe we are on relatively firm ground, because they are somewhat closely linked to the scheme of accounts. We call them the five key features of the main money circuit and their implications.² The other proposals are distinctly tentative; they constitute what we call a discretionary hypothesis.

Five Key Features of the Money Circuit

Each of the five key features of the main money circuit is a summary statement. Together they constitute a selective recapitulation of our findings up to this point with respect to moneyflows and loanfund balances. The first two characterize the variation of a sources and applications of funds statement we have adopted to portray moneyflows in accounting form, and indicate the types of accounting pattern equation that derive from this approach to the study of the money circuit. We call these two summary statements the two accounting features. The third and fourth features specify two types of transactor discretion that seem to us especially pertinent for monetary theorizing. One cannot deduce discretion from financial statements alone, but one can scarcely interpret them without recognizing that transactors choose among possible alternative transactions and that the figures can tell us a great deal about what choices are and are not open to the

Excerpted, with permission, from Morris A. Copeland, *A Study of Moneyflows in the U.S.* (New York: National Bureau of Economic Research, 1952), pp. 231–34 and 253–66.

transactors. In this wider sense the third and fourth features may be said to follow from the scheme of moneyflows accounts. The fifth feature construes transactors' moneyflows accounts as a quantitative expression of the system of pecuniary incentives that play a major role in organizing economic activity in our private enterprise economy. It indicates the record-keeping function that is essential to the operation of the system of pecuniary incentives and tells how it is carried out. Though a broad interpretation of the accounts, not a deduction from them, this fifth summary statement seems so fundamental a feature of the money circuit and this circuit's place in our private enterprise economy that we set it alongside the other four.

First Feature. Moneyflows are sources and dispositions of money. The main circuit moneyflows account for each transactor is a balancing account that tells where his money comes from and where it goes.

A transactor's sources of money are:

1. his receipts from customers and other ordinary receipts; and
2. the money he obtains through financing, i.e., through net decreases in his claims on others (liquidations of his portfolio and other claims he holds), and net increases in his liabilities to others (borrowing and, in the case of corporations, stock flotation).

A transactor's dispositions of money are:

1. his purchases of gross national product and other ordinary expenditures, and
2. the money he advances to finance others and the borrowed money he returns, i.e., his net additional investment in claims on others and his net retirements of liabilities.

Second Feature. Each moneyflow resulting from a main circuit transaction has two aspects: It is a source of money to someone, and it is the disposition of an equal sum by someone else.

The national account that summarizes all the moneyflows between transactors resulting from any particular type of transaction has a double-entry basis. Such a national account for any fiscal period will always balance (apart from statistical discrepancies and deviations from accounting uniformity).

Third Feature. Each household, each branch of government, each industrial corporation, and each other transactor has some discretion over his main circuit moneyflows. Most transactors have more or less discretion over their total ordinary expenditures.

Thus a transactor may elect to obtain money through financial channels and to increase the volume of his expenditures on goods and services; Or he may decide to become more parsimonious, advancing or returning to other transactors

through financial channels the money he does not spend; or he may be somewhat passive, merely increasing and decreasing his ordinary expenditures in response to the increases and decreases in his ordinary receipts.

Transactors differ in the degree of discretion they have over their total ordinary expenditures and in the way they exercise that discretion.

Fourth Feature. Each transactor has more or less discretion over the composition of his loanfund balance and the size of his cash balance. He can increase his cash balance by selling loans and securities from his portfolio or by borrowing. And he can draw down his cash balance to add to his portfolio or to pay off debts.

The range of this kind of discretion depends on the size of the portfolio and the cash balance a transactor holds to begin with and on his credit standing.

Fifth Feature. What money does in an economy is to keep the moneyflows accounts. It does this largely today in this country through debits and credits to individual accounts on the books of banks.

But currency outside banks is still a substantial part of nonbank cash balances. To the extent that it keeps the moneyflows accounts it does so in much the same way as poker chips serve as a substitute for a scorepad; transactors whose score is improving get in the chips, others get out of chips. When our monetary and banking system is operating properly a nonbank transactor can convert any part of his score in currency into a score in bank deposits, or conversely, as suits his convenience, and it is only the total (currency plus deposits) that counts. Indeed, if the composition of his balance becomes significant for the scorekeeping function, we take this to indicate that the system is out of order.

The scorekeeping function for moneyflows is not performed exclusively by currency and deposits. The way nonbank transactors use their own account books makes a minor contribution—through settlements by offset and through book credit. More importantly, other balances help to record the moneyflows score—loans and securities held, and notes, bonds, debentures, and mortgages payable, and (in the case of corporations) paid-in capital. Scorekeeping is primarily a matter of keeping track of the balance between ordinary receipts and ordinary expenditures; what a transactor adds to this score is what he adds to his loanfund balance.

The first two of these features are concerned with accounting patterns. Each such pattern may be stated in the form of an equation. There is an accounting pattern equation for each economic sector, and one for each type of transaction. Some (but not all) of the component moneyflows in these equations are of such a nature that for each (of the some) we can write a moneyflows, price-volume equation of the form $F = \sum pq$. These accounting patterns and price-volume equations may be called the equations of the money circuit. Like the equation of exchange they are intended to supersede, the equations of the money circuit are quite colorless as to causation; they do not identify which variables are active and which passive. But

they treat money differently. Money appears in the sector moneyflows accounts on an incremental basis—that is, the accounts show opening and closing cash balances—instead of treating money as a multiplicand that is multiplied by its rate of turnover. We believe the equations of the money circuit can be investigated empirically more effectively than can the equation of exchange. And if one desires to work with fewer equations, their number can always be decreased by combining sectors or types of transaction.

....

Who Exercises Discretion Over Moneyflows?

Our central question is: How do cyclical fluctuations in moneyflows come about? The foundation on which we propose to erect a tentative answer is given in the five key features and their implications. The structure we will erect on this foundation is not a whole theoretical building, complete in all details. Rather, it is a theoretical framework. If it should withstand the tests of time and critical examination, this theoretical framework should eventually be called a theory. But we consider it tentative in a way in which the foundation is not. Following scientific precedent in such a situation, we will speak of this framework as a hypothesis, not as a theory. And because we emphasize transactor discretion, the discretion over one's ordinary expenditures (outlined in the third feature) and over one's cash balance (specified in the fourth feature) in our tentative answer, we will refer to it as a discretionary hypothesis. Since our discretionary hypothesis is a theoretical framework, a structure the details of which remain to be filled in, it is not a hypothesis in the more specific sense—it is not a theory one can expect to test by some single critical finding of fact.

In outline, our hypothesis is this:

1. Cyclical increases and decreases in main circuit moneyflows are brought about immediately (i.e., proximately) by the way transactors exercise their discretion to increase or decrease their ordinary expenditures.
2. Each transactor is restricted and influenced in this exercise of discretion on the one hand by its consequences for his loanfund account and by what he does about them, and on the other hand by the effects of other transactors' decisions on his moneyflows and on his loanfund balances.
3. Because we are dealing with a circuit that has no end and no beginning and because every transactor is greatly influenced in his decisions by the decisions of others, all transactors in a sense share responsibility for cyclical increases and decreases in moneyflows. But they do not all share alike. Our discretionary hypothesis includes an effort to discriminate, to find some transactors (not always the same ones) more responsible than others.

A large part of the more detailed statement of the hypothesis consists in spelling out the ways transactors restrict and influence one another in their exercise of discretion. We have said that we would attack the question of how cyclical fluctuations in moneyflows come about in terms of two concurrent

general economic adjustments. These two interacting adjustments play a central role in the mutual conditioning of transactor discretions. They are: (1) the adjustments in the markets for goods and services and the adjustments affecting all other ordinary transactions (moneyflows like business taxes that are classified as product transactions but are not what one commonly thinks of as market transactions, and transfer payments as well); (2) the adjustments that affect the moneyflows through financial channels.

We believe these two processes can best be understood, not as adjustments *de novo* in each fiscal period, but as readjustments of the moneyflows of the period immediately preceding. Much has been said about the stickiness of prices. Something like stickiness applies to moneyflows. A good many moneyflows tend to repeat themselves. Thus wherever we find formal budgeting, it starts with figures for the preceding year. In the aggregate this gives the money circuit a kind of inertia. The level of ordinary expenditures tends to continue, subject to upward or downward readjustments.

Since the moneyflows are interrelated in a system of social accounts, increments and decrements in moneyflows must be so distributed as to preserve accounting balances. But this does not mean they must be evenly distributed among transactors. On the contrary, when the volume of ordinary transactions changes, some transactors (not always the same ones) will usually be changing their ordinary expenditures ahead of others.

Consider the case of a cyclical increase. If we think of the economy as temporarily divided into two sectors, sector A or those who are taking the lead in expanding their ordinary expenditures, and sector B the others, we can indicate how the two concurrent readjustment processes appear in the accounts. They show as four net increments:

X_{AO} = the increment in A's ordinary expenditures minus receipts

X_{BO} = the increment in B's ordinary receipts minus expenditures

X_{AF} = the increment in the net money A obtains through financial channels

X_{BF} = the increment in the net money advanced or returned by B.

The relationships among these four increments are corollaries of the quadruple-entry system of moneyflows accounts. X_{AF} and X_{BF} are to be understood in an algebraic sense, if money flowed from A to B in the base period. $X_{AF} = X_{BF}$. In part at least this increment in flow from B to A is likely to mean intersector transactions in loans and securities. Also, $X_{AO} = X_{BO}$. Presumably a major part of this moneyflow arises from sales and purchases of commodities, and of labor and other services. Further, $X_{AO} = X_{AF}$ and $X_{BO} = X_{BF}$. A's account and B's account must remain in balance.

If the two sets of readjustments $X_{AF} = X_{BF}$ and $X_{AO} = X_{BO}$ proceed in large degree in markets that are as separate as the loan and security markets are from

the commodity, service, and labor markets, it is natural to ask: How does it happen that an overall balance in the moneyflows accounts is always achieved? We can think of most of the readjustments affecting ordinary receipts and expenditures as goods and service market readjustments. The readjustments that lead to $X_{AF} = X_{BF}$ are only partly market readjustments; as far as one type of financial source or disposition of money is concerned—that arising from changes in cash balances—the process is automatic. The change in the cash balance is the balancing item in the moneyflows account. What happens in the commodity and service markets fixes the increments in ordinary receipts and ordinary expenditures, and consequently the changes in the net financial moneyflow. The immediate effect of the net financial flow is on the cash balance. If a transactor's cash balance gets large, he will often be tempted to supply funds to others through the loan and security markets (or pay off his debts). But he may increase his spending. If his cash balance gets low, any nonbank transactor will have to obtain money from the loan and security markets, or else curtail his spending. Thus what he does (or fails to do) in the loan and security markets has repercussions on his ordinary transactions, and consequently on the commodity and service markets, and his dealings in commodities and services affect what he does in the loan and security markets. The cash balance may be said to provide a mechanism by which the readjustment processes in the commodity and service markets and the readjustments in the loan and security markets are made to keep pace with each other day by day. No doubt the two processes of readjustment are to a large extent directly tied together. Ordinarily a transactor will not elect to dishoard and spend on an extensive scale unless he can borrow or liquidate his portfolio to finance his increased spending. And often a transactor who sets out to stint and hoard does so in order to pay off debts, less frequently to build up his portfolio. But debt and portfolio transactions on the one hand and ordinary transactions on the other will seldom precisely offset each other. For the most part the cash balance takes up the discrepancy between the two. And for each transactor it is a kind of spring connecting the loan and security markets and the commodity and service markets—and transfer payments. Compressed too far, this spring forces a transactor to borrow, liquidate his portfolio, or curtail ordinary expenditures. Expanded far enough, it is likely to induce him to repay debts, add to his portfolio, or step up his ordinary expenditures.

We may now attempt to incorporate the two concurrent readjustment processes in a partial statement of our hypothesis:

1. Each of various transactor groups is or may be in a position to increase or decrease its purchases of gross national product somewhat independently of its ordinary receipts and its other ordinary expenditures. (An increase means a $+X_{AO}$, a decrease a $-X_{AO}$.)
2. An increase in gross national product expenditures can be financed by obtaining money through financial channels ($+X_{AF}$), and the money re-

leased by a decrease in gross national product purchases can be advanced or returned to other transactors ($-X_{AF}$).

3. When a transactor group so increases or decreases its purchases of gross national product, the extra money required for the increase will necessarily just equal the extra money other transactors advance ($+X_{BF}$), and the money released by a decrease in gross national product purchases and advanced to others will necessarily just equal the extra money others require ($-X_{BF}$).
4. When a transactor initiates an increase or decrease in gross national product purchases, the volume of his purchases and the money he obtains through financing will tend to move together; but when he is relatively passive, his gross national product expenditures are likely to be more closely correlated with his product receipts minus nonfinal product expenditures.

By way of clarification and qualification, several things need to be said about the part of our hypothesis outlined in these four propositions.

First, they are certainly not to be taken as an explanation of the business cycle. They deal with only one phase of the cycle: What happens to moneyflows when they expand and contract? Or, alternatively: How are increased purchases of gross national product financed? Where does the money go that is released by decreased purchases of gross national product?

Conceivably, of course, all transactor groups may act—in either expanding or contracting their ordinary expenditures—so synchronously that no group will need to obtain more money from others through financial channels than it has been getting before. But we cannot presume this to be so in general. The four propositions refer to a situation in which some groups are expanding or contracting ahead of others.

The four propositions imply that, in a sense, all sectors are on a par in the money circuit. There are significant differences, too. Cyclical changes in the dollar volume of most transactors' ordinary receipts are due chiefly to decisions made by others. But in the case of governments, the power to fix tax rates means the power to influence ordinary receipts. Again, some transactors have a wider range of discretion over cyclical changes in the dollar volume of their ordinary expenditures than others. If a transactor is to be in a position substantially to expand his ordinary expenditures without a compensating expansion in his ordinary receipts, his credit position must be such as to enable him to do the necessary (loanfund) financing. Some of the larger industrial corporations have a fairly strong position in this respect, but the Federal government's credit position is certainly much stronger. Still further, there are major differences among transactor groups in the considerations that influence changes in the volume of ordinary expenditures. Thus the consideration that an expenditure is needed to decrease or to relieve unemployment appeals almost exclusively to government. In other words, although all transactors are, in a significant sense, on a par with

respect to their status in the money circuit, we should not forget that they exhibit different behavior patterns. Proposition 4 indicates that some transactors take the initiative while others are relatively passive. To determine who is taking the initiative when the volume of moneyflows is changing is bound to be difficult. Nevertheless, we believe the question, Who is taking the initiative? is basic for an adequate account of the process by which increases and decreases in moneyflows are brought about.

It has been suggested above that a transactor whose ordinary expenditures exceeded his ordinary receipts or who was dishoarding in the sense of drawing down his loanfund balance was contributing toward an increase in moneyflows. We noted that it would not do to count an absolute excess of ordinary expenditures as a "favorable" balance of trade, because if we do, the sum of all "favorable" balances will (apart from errors of estimate and accounting nonuniformities) always be just equaled by the sum of the "unfavorable" balances.

But we believe there is merit in the idea that "favorable" and "unfavorable" balances, or loanfund hoarding and dishoarding, inaugurate changes in the volume of moneyflows. Indeed, we contend that this is a sound idea, if only we take the balances not in an absolute sense but in the light of what has gone before. We propose to distinguish between the hoarding that accompanies a greater decrease in ordinary expenditures than in ordinary receipts and the hoarding that accompanies a smaller increase in ordinary expenditures than in ordinary receipts, and to make a similar distinction in the case of dishoarding. Thus we have to take account of four possibilities for any transactor group:³

Active hoarding—stinting plus hoarding

Passive hoarding—the hoarding that accompanies an increase in receipts and a slower increase in expenditures

Passive dishoarding—the dishoarding that accompanies a decrease in receipts and a slower decrease in expenditures

Active dishoarding—dishoarding plus increased spending

In general the two entries in the right-hand column characterize an expansion phase of the business cycle, the two in the left a contraction phase. The two entries on each line specify financial moneyflows that are in the same direction. In the case of each of the two shorter entries the transactor ordinarily takes the initiative. In each of the other two, the initiative rests for the most part with others.

If we can distinguish these four modes of behavior we may say that dishoarding plus increased spending makes for an expansion in the volume of flow in the main circuit, and that stinting plus hoarding makes for a contraction. But we must say also that the hoarding that results from slowly increased spending and the dishoarding that results from slowly decreased spending do not have these effects.

To explore the implications of these distinctions it is convenient to think of transactors in terms of a three-party system, the three parties being called respectively bulls, bears, and sheep. Bulls are transactors who dishoard to increase their spending. They are active dishoarders. Bears are those who stint and hoard. They are active hoarders.⁴ All other transactors are sheep. Ordinarily sheep will be increasing their expenditures so slowly that they hoard when the volume of moneyflows is expanding; and they will be decreasing their expenditures so slowly that they dishoard when the volume of moneyflows is contracting. They are passive hoarders and passive dishoarders. A transactor may change his party affiliation as often as he likes, but we suspect that most transactors will be sheep most of the time.

To the question, How do increases and decreases in moneyflows take place? we answer then: Mainly and immediately through the decisions of individual transactors about their ordinary expenditures. Each transactor, within the limits set by his net loanfund balance receivable and his credit standing, can elect to increase his ordinary expenditures, even though there is no increase in his ordinary receipts—that is, he can elect to be a bull (active dishoarder). Or he can elect to be a bear (active hoarder).

Our hypothesis implies that changes in active cash balances are a consequence of and a necessary condition to changes in moneyflows, not a cause. The increased spending of a bull results from a decision by the bull. The decision is made possible by his ability to dishoard. His dishoarding may take the form of drawing down his cash balance or borrowing from or selling securities to banks. The hoarding of other transactors may take the form of increased holdings of cash or may take other forms.

Much of the time the question whether moneyflows will increase or decrease is determined by whether the bulls (active dishoarders) or the bears (active hoarders) predominate. But the bulls and the bears alone do not fix the entire amount of the increase or decrease. When a cyclical increase gets under way, it tends to become cumulative, i.e., sheep may keep the expansion in their ordinary expenditures nearly abreast of the expansion in their ordinary receipts. On the downswing, too, we must allow for the influence of the sheep. Contraction of moneyflows is perhaps even more likely to be strongly cumulative than expansion.

The bulls (active dishoarders) may be in evidence throughout an entire cyclical upswing and the bears (active hoarders) throughout an entire downswing, or they may not. But we should probably allow also for the possibility that during both an expansion and a contraction practically all transactors may approximate the status of sheep at the same time, no one taking the initiative either by increasing his expenditures much more rapidly than his receipts increase or by decreasing his expenditures much more rapidly than his receipts decrease. Stinting plus hoarding and dishoarding plus increased spending are particularly likely to be operative at the turning points in the cycle.

If our hypothesis is correct, the different parties should exhibit distinctive

moneyflow patterns. Do they? Are they distinctive when we have moneyflows accounts for ten sectors on an annual basis, as in our data? To the extent that a transactor group includes members of all three parties at the same time, we may have trouble; we could reasonably expect to do better with a larger number of sectors. A more urgent consideration may be that transactors are likely to change parties in midyear. Quarterly data should help materially. But even in the data at hand there are striking party differences, as can be seen from Figures 8.1 through 8.4.

The summary moneyflows account of each sector appears in two parallel grids, dispositions of money at the left, sources at the right. To facilitate comparisons between sectors, transfers are always in the left-hand grid, net receipts appearing as a negative disposition of money. Similarly, the net financial flow is always at the right, and net money advanced or returned to others shows as a negative source. The sum of the two ordinates in the left-hand grid equals the sum of the two ordinates in the right, except for the discrepancy in the account.

We should expect to distinguish the parties that exercise active discretion over moneyflows—the bulls and the bears—chiefly (1) by increments and decrements in gross national product expenditures that are larger than the increments and decrements in product receipts minus expenditures *n.e.c.*; and (2) by a similarity between the patterns of the curves portraying gross national product expenditures and net money obtained through financing. However, we should be prepared to add in net transfer expenditures for a sector that has a large amount of discretion over this type of moneyflow, and to take cognizance, in locating discretion, of any important discretion a transactor—such as the Federal government—may exercise over its net product receipts (product receipts minus nonfinal product expenditures).

We should expect to distinguish the sheep chiefly by increments and decrements in product receipts minus expenditures *n.e.c.* that are larger than those in gross national product expenditures, and by a negative relationship between net product receipts and net money obtained through financing. But some allowance may have to be made for the discretion exercised over transfers.

The most striking feature of the charts is that the Federal government stands out clearly as an active discretionary party most of the time. When we take into account that the net transfer payments curve reflects the veterans' bonus in 1936 and declines in 1937 partly because the bonus did not recur and partly because social security tax collections began (only the collections from households affect the transfer curve), we can fairly say that the Federal government exercised an active, substantial discretionary influence on moneyflows in each of the seven years.

The case for identifying other sectors in an active, discretionary role is less strong. Apparently the rest of the world belongs in this category during most of the seven years, but its influence on our moneyflows is not very great. There is a definite suggestion also that industrial corporations were bulls in 1937 and bears in 1938, but we should certainly need to qualify any such interpretation by the

Figure 8.1 GNP Expenditures and Other Moneyflows (net)

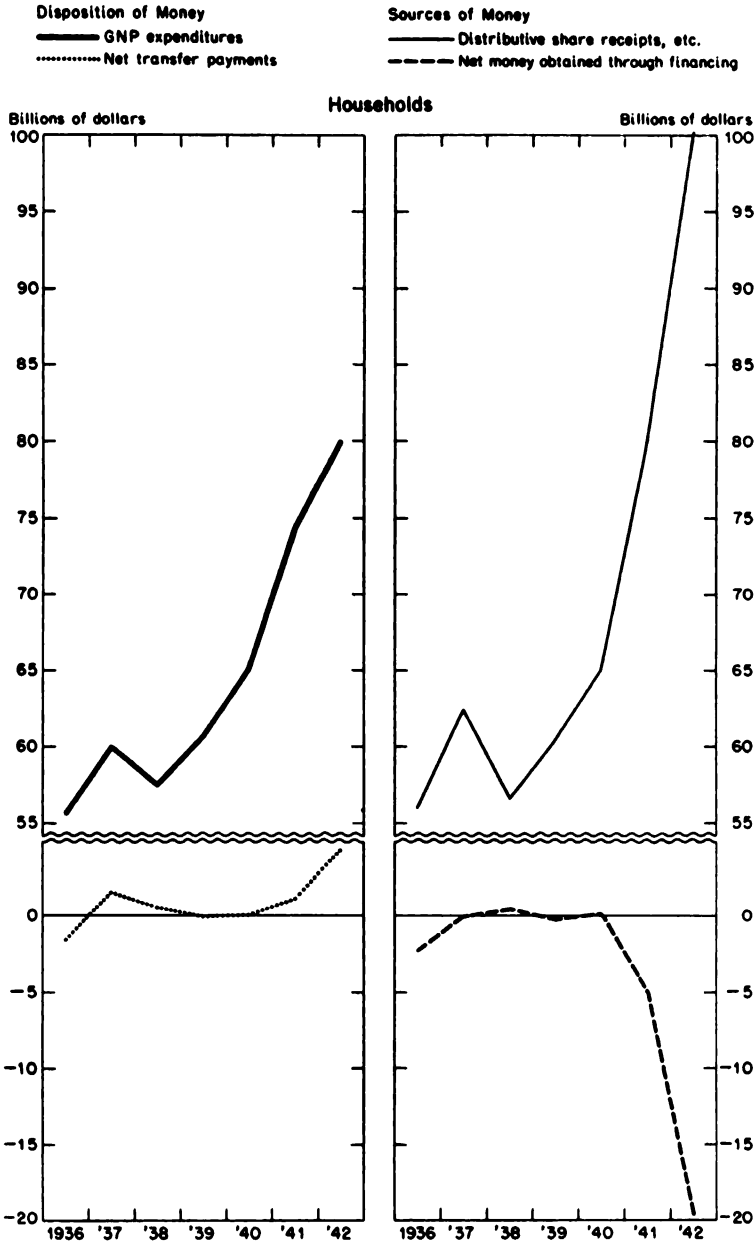


Figure 8.2 GNP Expenditures and Other Moneyflows (net)

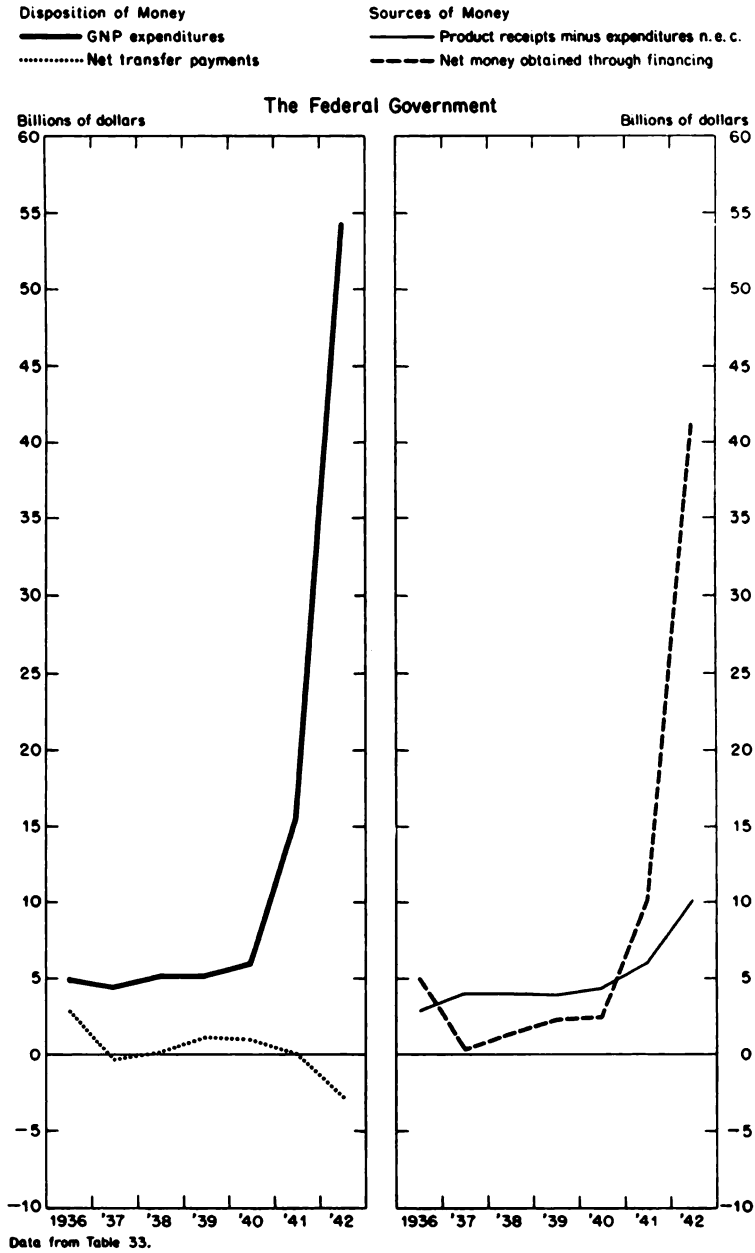


Figure 8.3 GNP Expenditures and Other Moneyflows (net)

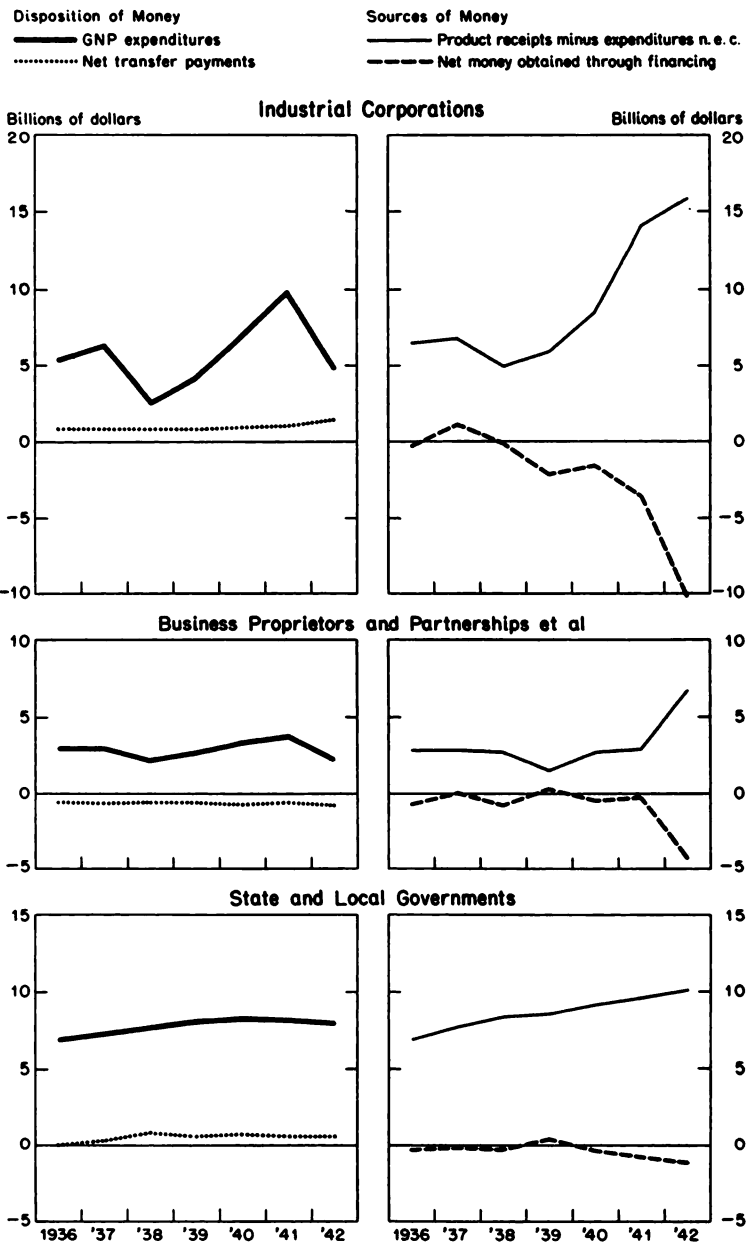
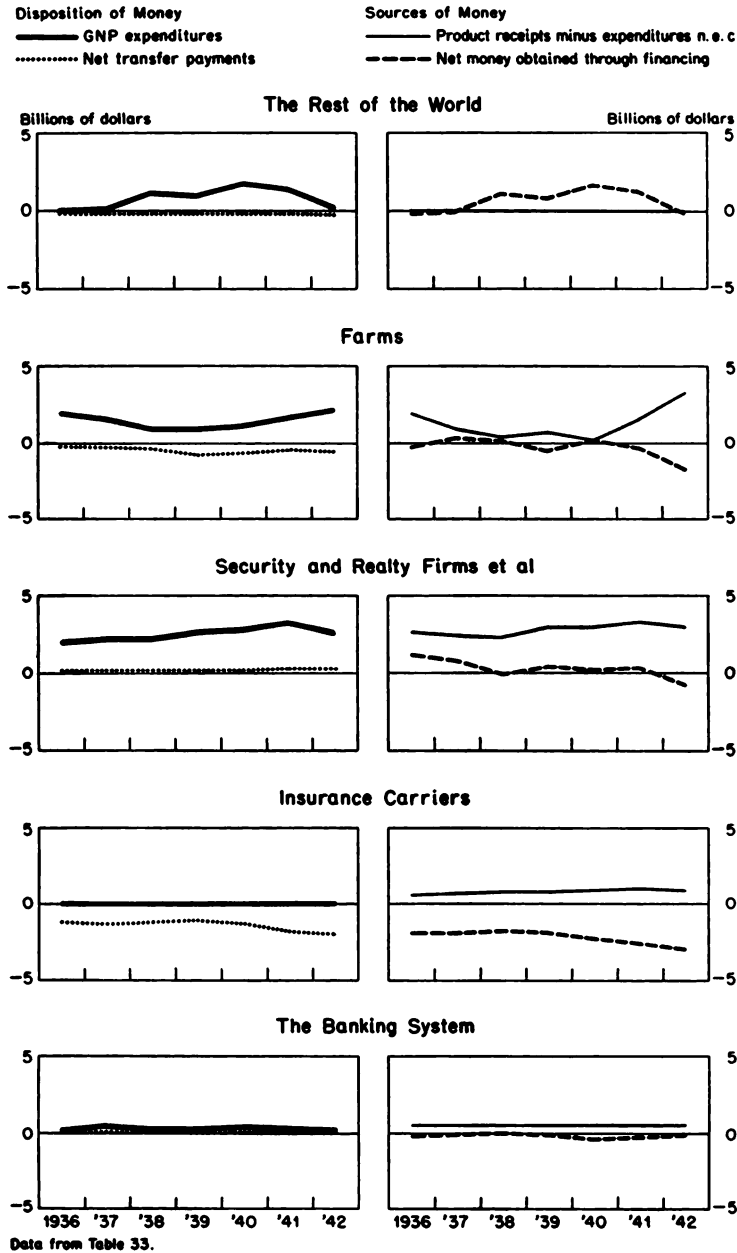


Figure 8.4 GNP Expenditures and Other Moneyflows (net)



proviso that quarterly data might make the timing in this period look quite different.

When we try to identify the passive sheep sectors, the most obvious case is households. State and local governments also appear to qualify throughout a major portion of the seven years. In general, gross national product expenditures move with, but less sharply than, net product receipts. For households most of the time there is a negative relation between distributive share receipts, etc., and net money obtained through financing. During World War II we can identify three other groups as sheep: industrial corporations, business proprietors and partnerships et al., and farms. But in the first two cases we should recall that markets were not free; gross national product (capital formation) expenditures declined in 1942 (contrary to the pattern we have outlined) because of wartime restrictions.

On the whole we believe these charts show that on our hypothesis one can do a good deal even with annual figures to identify those who actively exercise discretion over their moneyflows, insofar as the period under review is concerned. But we concede that it is a rather special period. It remains to be determined whether a longer time span and greater detail will continue to afford this kind of confirmation for our hypothesis. If it does, the hypothesis may prove an extremely useful tool for current business analysis.

We have said nothing so far about the discretion exercised by banks and U.S. monetary funds, because their ordinary transactions are so small and because we have focused attention on the discretion a transactor exercises over his own moneyflows. We shall take up next the discretion of banks and U.S. monetary funds over the moneyflows of other transactors. This is by no means all we would need to do to trace the various ways transactors condition one another in exercising discretion over moneyflows. But it is the most crucial missing piece in our picture. We shall pass over the rest, including other channels of government influence over the moneyflows of private transactors and including the influences of price changes on cyclical changes in the volume of moneyflows.

Short Guide to Copeland's Terminology

moneyflows: a transactor's receipts and expenditures on goods, services, and transfers, and his net financial receipts or expenditures. *Also:* sources of funds (credits) and dispositions or uses of funds (debits) arising out of transactions.

loanfund balances: a transactor's holdings of financial assets (including money) and financial liabilities.

net loanfund balance: a transactor's holdings of financial assets less financial liabilities.

statement of payments and balances: a sector flow-of-funds account. Part I includes ordinary receipts and expenditures and the change in the net loanfund balance. Part II includes the loanfund balances and computation of the change in the net loanfund balance.

ordinary receipts: nonfinancial receipts; receipts on account of goods, services, and transfers.

ordinary expenditures: nonfinancial expenditures; expenditures on account of goods, services, and transfers.

main money circuit: moneyflows that play a substantive part in overall economic adjustments. So-called technical transactions are excluded. *Also:* the set of transactions measured by the moneyflows account. *Also:* the sum of ordinary and financial dispositions (uses) of funds by all sectors.

money obtained: the increase in a transactor's financial liabilities.

money advanced: the increase in a transactor's financial assets.

source of money: accounting credits reflecting nonfinancial receipts and increases in financial liabilities. *Also:* sources of funds.

disposition of money: accounting debits reflecting nonfinancial expenditures and increases in financial assets, including currency and deposits. *Also:* uses of funds.

Notes

1. Various terms used in this reading are defined in the glossary at the end of the selection—Ed.

2. The view of the money circuit outlined here is on the whole very similar to that taken by J.R. Hicks in his *Value and Capital* (London: Oxford University Press, 1946). But with the moneyflows accounts for eleven sectors before us we must be specific on many points on which he makes no explicit commitment.

3. It may be contended that this language lacks generality, that in the first two possibilities "hoarding" should be replaced by "increased hoarding or decreased dishoarding" and that in the other two "dishoarding" should be replaced by "increased dishoarding or decreased hoarding." Technically this contention is valid. But the cost in cumbersomeness of expression that these amendments would entail seems to us far greater than the small gain in increased generality.

4. The precise definitions of these types of behavior depend in part on the length of the fiscal period and the transactor groupings. A sector is classed as an active dishoarder when (a) the current year's financial flow is a source of money and (b) total ordinary expenditures for the current year are larger than in the preceding year. A sector is classed as an active hoarder when (a) the current year's financial flow is a disposition of money and (b) total ordinary expenditures for the current year are less than in the preceding year.

STEPHEN P. TAYLOR

Flow-of-Funds Projections

(1963)

The title of this paper is misleadingly general. It gives the impression that several separate forms of flow-of-funds analysis have been developed to further central-bank policy formation and that these are to be listed systematically here. This is not the case. The following pages are concerned almost exclusively with using flow-of-funds data in short-run projections of future financial flows. This is not because projections are the *only* use that we have been making of flow-of-funds accounts but rather because it is the one application so far that recognizes the nature of the accounts as a closed system for the economy as a whole.

As a closed system—that is, one that covers all transactions both as payments and as receipts—flow-of-funds accounting is a framework for macroanalysis in which everything depends on everything else in the economy to some extent. Macroforms of analysis have not been spectacularly successful in predicting events lately, but they nevertheless have strong appeal, in that they recognize interrelations among parts of the whole explicitly. These interrelations are particularly important when financial transactions are involved, since financial flows tend to be more volatile than nonfinancial and have erratics that reverberate throughout the system.

Flow-of-funds accounting has always been intended for macroanalysis and still is, even though, until now, algebraic systems have been of only the most rudimentary forms. Several kinds of work are under way at present in algebraic terms, and these projects or their successors are undoubtedly the most fruitful way to state simultaneous relationships in financial markets that we have been trying to express in words for years. Until that work comes to something, however, the most interesting form of flow-of-funds analysis in a macroeconomic framework still appears to be the projection work that I take up here.

Reprinted, with permission, from Stephen P. Taylor, "Uses of Flow-of-Funds Accounts in the Federal Reserve System," *Journal of Finance* 18, no. 2 (May 1963): 249–58.

Relation to Other Projection Forms

Flow-of-funds projections are an extension of the standard form of balanced income-and-product projection into financial markets. In an accounting sense, the only constraint on the usual income-and-product projection is the requirement that total income equal total product for the economy as a whole. Then, if the definitions used in the system are consistent, it turns out that total projected saving also equals total projected investment.

The usual exercise of this type goes into enough detail on distribution of factor income and composition of demand to indicate a division of total saving into personal, business, and government. Less frequently it is possible to see a corresponding division of investment demand among the three sectors. But that is as far as such projections go. That saving equals investment necessarily implies that saving finances investment, either directly or by roundabout routes in financial markets. Standard income-and-product projections disregard the question of routes of financing, however, and thus disregard any interaction that may be present between income-and-product conditions and financial-market conditions—as reflected in interest rates and credit availability. The implication is only that the projected level of investment *can* be financed one way or another, since an equal amount of saving has been projected to exist.

Flow-of-funds projections undertake to spell out the types of financial flow that carry funds from where they are saved to where they are invested and to record the financial claims established by these flows. A good many such types of flow can be distinguished—for example, self-financing, such as through retained earnings and depreciation allowances; direct lending, such as through individuals' purchases of securities in financial markets; intermediation, in which individuals put their funds with institutions in the form of deposits and insurance reserves, and the institutions then purchase securities; bank lending through money-supply creation; government lending activities; and international capital flows. The list could be extended to tedious length. Beginning with the single statement that saving equals investment, flow-of-funds projections articulate such financial flows to any level of detail that appears appropriate in the circumstances of the question at hand.

Financial-flow projections are certainly not new with the flow-of-funds accounts on either a sector or a market basis. The Treasury was making such projections during World War II as part of its debt management operations, and projections of flows into and out of various private credit markets have been made for many years by Bankers Trust Company; the Life Insurance Association of America; and Scudder, Stevens, and Clark, to mention the most prominent examples. These have tended to be *market* projections aimed at the following question: If banks and other financial institutions put such-and-such an amount into corporate bonds or mortgages or whatever the instrument may be, how much must private investors put into that market in order to meet the projected demand

for funds by borrowers? There have also been a good many *sector* projections over the years—any forecast of the balance of payments statement is one, as is a projected sources and uses of funds statement for corporations or, for that matter, the federal budget.

The difference between flow-of-funds projections and these others is essentially that the flow-of-funds form attempts to project all markets and all sectors simultaneously. The point is made most graphically by the matrix form of the accounts that we publish with the time-series tables each quarter. The matrix tables get relatively little attention, since they are an inefficient source from which to pull numbers out of the accounts, but they are no less than essential for understanding the nature of the system and for setting up any broad form of analysis in the accounts. In terms of the matrix, the market projections I have mentioned put numbers into some set of the financial-transaction rows of the table and force a balance of sources and uses of funds horizontally. The sector projections force a balance in one or another columns—for example, the rest-of-the-world column in a balance of payments projection.

In these terms, the essence of the flow-of-funds projections we have been making is that they attempt to force a balance among projected transactions in all rows and all columns simultaneously. Thus saving projected for each sector must equal investment by that sector and, at the same time, be an element of total saving projected for the economy as a whole. Similarly, consumer purchases of government securities must coordinate simultaneously with consumer sources of funds available for security investment, with total issues of governments, and with the amounts bought by other sectors.

Projection Procedure

Technically, the job of the accounts is no more than this policing function of maintaining consistency. The projection numbers themselves must come from whatever evidence is deemed useful as to propensities to spend, save, borrow, or lend. Thus, working on a sector basis, the income-and-product accounts can take us a considerable distance toward the completed projection.

For the consumer sector, as an example, a usual form of income-and-product projection can give us both personal saving and spending for durables and houses. The durables and houses projections are then the main basis for estimating consumer borrowing within a fair range of accuracy. We have at this point a projection of all sources of funds for consumers' capital account—saving and borrowing—and their nonfinancial investment uses. Using as the next step the identity equation that total uses of funds by consumers equal total sources of funds, we immediately have a total for consumer financial investment residually without looking at any other sector of the economy. We can proceed thence to allocate total financial investment among types—securities, insurance, savings accounts, and cash—using such behavioral information as we have on house-

holds, together with the income estimates of the model and a few broad assumptions about monetary and debt-management policy. The result is a complete projection of households' aggregate capital account giving both sources and uses of funds.

Such a procedure is, in fact, the first step in constructing a flow-of-funds projection for households, and it is at this stage that substantive propositions about individuals' propensities to invest in various forms of asset are brought into the picture. Such propositions concern demand for cash balances, effects of interest rates on savings-account demand, flows of equity capital into noncorporate business, and effects of financial asset structure on demand for securities. The flow-of-funds contribution to such questions consists of a body of aggregative historical data that can be examined in a number of ways, econometric and other.

These data are not sufficient in themselves for solid analysis of the questions, since they are highly aggregative and since they refer to the past, not the future. Outside information on expected trends in distribution of income, consumption, saving, and wealth and on family structure are all highly relevant, particularly for long-term projections. Trends and relationships implicit in the historical figures must be modified for the future by whatever changes in household propensities are evident in such material on economic structure.

So far, however, this is standard projection procedure, done within the constraint that total household uses of funds equal total household receipts. In flow-of-funds projections, corresponding balanced statements are put together for business, governments, and foreigners. Financial intermediaries' receipts (mainly deposits and insurance reserves) are then residually the sum of such flows estimated from the asset or uses side for nonfinancial sectors. Intermediaries' lending is correspondingly a residual at this point: total borrowing in each form of financial instrument—government security, corporate bonds, mortgages, and so forth—less lending in such forms already projected for consumers, business, governments, and foreigners. If the arithmetic of the matrix has been done correctly, intermediaries' lending also turns out to be closely equal to their receipts; balance of flows has been maintained in the economy, and the projection is at least internally consistent.

At this point when the last figures are being inserted in the projected matrix, however, it frequently becomes apparent that the combination of "reasonable" projections for the nonfinancial economy has resulted in a grotesque pattern of flows for banks and intermediaries—too little or too much growth in money supply and other liabilities or too much of security types that these institutions have little interest in and not enough of the types they concentrate on, such as mortgages for savings banks. This discovery starts a round of successive adjustments of individual transaction projections, within the matrix constraint, in order to permit a more sensible structure of financial flows through intermediaries. All types of transactions and sectors are open to alteration in this process if the

changes help to improve the total picture. The original income-and-product model itself may, in fact, need modification; when this occurs, the meaning of the first version of the matrix is that the model cannot be financed through reasonably normal means as it stands and hence is not a real possibility for the future.

This process of successive adjustment throughout the matrix is the most purely macroeconomic stage of a flow-of-funds projection. It is at this stage that the projection for household financial investment, for example, is given color beyond what is possible by looking only at behavior patterns. All the adjustments made at this stage are deviations from what had appeared most reasonable at the start for each sector viewed in isolation. The process amounts to warping the original sector projections into consistency with one another while leaving each still within the bounds of plausibility.

Such a process—that is, a full macroeconomic projection—is worthwhile most particularly when the economy is expected to depart sharply in some respect from the recent past, either in composition of GNP demand or in form and structure of credit demand. The year 1959 represented such a departure for the United States, since it presented the rare combination of a large federal deficit and high private investment spending. Projections of unusual situations of this kind inevitably imply unusual patterns of financial flow, without indicating specifically the patterns to be expected. Single-sector projections under these circumstances are almost always too conservative in pointing to new extremes, either high or low, in financial flow, since we all have a strong reluctance to make projections that go outside the range of historical experience. Placing borrowing demand up against supply of funds within the matrix often forces us to make such ventures into new territory, however, in order to keep all sectors together somewhat closer to the range of flows we have been accustomed to.

Present Position of Projections in Current Analysis

Up to this point I have tried to indicate the peculiar nature of flow-of-funds projections at the Board of Governors without saying what the projections are used for or are intended to show. The first thing to understand about these projections is that they have no official status whatsoever as a framework or guideline to policy formation. I would have committed a grievous error if anyone were to have the impression that the Board or the Open Market Committee hangs its decisions on the latest projection of inflation, depression, or stability emanating from their flow-of-funds staff. The projections are typically put together by a small group within the Board's research division and presented to various audiences inside and outside the system as no more than the work of that small group. They are, in general, not negotiated projections in the sense that some set of specialists or agencies must endorse the final figures as acceptable.

Moreover, the projections are not presented to anyone as forecasts. The dis-

tion between a projection and a forecast inevitably becomes a little muddy as the work proceeds and has become a pretty old joke at the Board. The distinction nevertheless exists and matters to those making the projection. The key to the distinction is that a projection always starts from a small set of explicit assumptions about future events, and the body of the projection consists of no more than a working-out of the consequences of these assumptions for the period covered. In a formal sense, that is, the projection is a form of simulation exercise: If such-and-such a set of events is premised to occur, what other events will also take place as part of the same system?

The assumptions that constitute the premise of the exercise deal mainly with GNP demand components, and to the extent possible they are based on prominent public sources, such as Treasury budget documents and surveys of plant-and-equipment spending plans. These public sources are not always completely plausible, from the staff's viewpoint, as forecasts of what will happen. They nevertheless represent a common ground of information for those who follow current developments closely, and the arguments in favor of projecting from that common ground have always been persuasive enough in the past to override any proposals to substitute more realistic estimates of future transactions.

In general, of course, the assumptions have had considerable relation to real expectations, and the projections have correspondingly had some suggestion of forecast about them. The formalism of the assumptions is nevertheless important to the operation at this stage, since the techniques available for working out the projection—that is, for developing the consequences of the premise—are still primitive and subject to extensive further experimentations. The position of the projections in the Board's work is correspondingly modest. The projections are viewed as an exploratory activity that does or does not show promise, depending on whom one speaks to, and that circulate in the system as one of many kinds of information that might be relevant to assessing the current situation.

The projections we have done so far—there have been about eight in the last 5 years—have been short-run, reaching no farther than 18 months into the future. There is nothing in the system that prevents long-run projections—5 or 10 years—and, in fact, the procedure described here has already been used to project financing arrangements for a 5-year development plan for a country in the Far East. The subject has not yet come up seriously at the Board, however, and there has been quite enough in the short run to keep us busy up to now.

The aim of the projections, stated narrowly and loosely, is to depict the volume and structure of financial-market flows that could be expected for the coming year or so on the basis of the postulated assumptions about GNP demand that I mentioned earlier. The financial flows so derived can then be read for the signals they carry as to movements in interest rate structure, other forms of financial market pressure, and subsequent shifts in demand and supply.

Stated this way, the purposes of the projections are similar to those of the Scudder, Stevens, and Clark, Life Insurance Association of America, and Bank-

ers Trust projections. There are essential differences, however, between financial projections made from the central bank's point of view and those from private investors' viewpoint. The basic difference is that private investors must try to predict, by some means or another, what monetary policy *will actually be* in the face of projected credit demands, whereas a central bank projection might validly be expected to indicate what monetary policy *ought to be* in the face of these credit demands. This difference is critical in stating the purpose of the projection. In the private case, the purpose is to forecast movements in interest-rate levels and structure, given the projected interactions between credit demands and monetary-management actions. In the central-bank case, the purpose would be conversely to determine some form of instrumental action that looks consonant with the projected demand conditions.

Assumptions and Procedures

I have deliberately overstated the goal of a central-bank projection here, in order to bring out the contrast with private projections. The projections should obviously, like any other economic information, give some indication of a reasonable course for future monetary policy, but we cannot expect them to spell out in dollar terms *the* optimal course of action. In practice, rather, the most that can be asked is that, among the assumptions that we start from, there be some statement of the nature of monetary policy during the projected period. Such a statement might refer to money-supply movement, bank reserves, or even as limited an area as net open-market purchases of governments. Putting the assumption in terms of interest rates is one of this class of statements, although a relatively complex way to put the assumption. The form used for a monetary policy assumption is among the most critical aspects of the projection job and could easily be the subject of a paper by itself. It is one of the major points in the projection that makes the result hypothetical rather than a forecast, since the whole construct hinges on an "if" statement, that is, what would happen if monetary policy were to take the course specified as a premise?

There is no requirement, of course, that the policy assumption be realistic. We can validly run through a projection exercise in which policy actions are assumed to take any form we wish, whether procyclical, anticyclical, or neutral. Such exercises can be educational in a number of ways, to the extent that we have any statistical basis for following through on the assumption used. This is simulation work in a fairly pure form, and such possibilities bring out sharply the distinction between projections and forecasts.

The procedures we have used for developing the basic input elements of a projected matrix are still far from standardized. As I indicated earlier, we have not had systematic algebraic models underlying our projections, either for parts or altogether. Starting with the key assumptions mentioned earlier, our projections have taken form first as a cut-and-paste form of GNP model, that is, one in

which the assumed demands are integrated with other forms of demand and with income by successive approximations that result finally in a set of accounts that is both balanced as between income and product and that is plausible in all its parts. That model then becomes the starting point for a financial-market projection that is similarly worked into consistency by successive adjustments. For the financial part of the model, consistency and balance must be not only internal to the financial system but in relation to the GNP projection as well.

Dozens of individual relationships among income, spending, borrowing, and financial investment have been used from time to time in setting up the complete projection, but not in any integrated fashion that might be fed directly to a computer, for instance. This is not to say that an algebraic system should not have its place in the operation, but only that it has not had it so far. Setting up first versions of both the GNP and the financial parts of the system have been time consuming and for many of the parts fairly mechanical, and it is tempting to imagine a set of equations that would do much of this first-order business for us. The Federal Reserve is hardly prepared yet to run its affairs on the basis of an econometric model or even to listen to projections that are no more than that. I suspect, however, that a simple system could be devised that would trace through many of the first-round routine details of the calculation just about as well as people can. That possibility is still to be explored.

Quality and Usefulness of Projections

There remains the question of quality of projections as evidenced by postmortems. With eight or more projections behind us now, there is enough material at hand to present a concise statistical study of the relation of our projections to actual events. We have not done such a study, however, partly because of the conceptual problems in stating a relation of projection to actuality. An immediately evident problem here is that the projection has a great many degrees of freedom and can deviate from events in an equal number of dimensions covering most of the elements of both the GNP and financial projections. This means that we need some efficient form of summary for the structure of differences, one that has meaning and can be grasped fairly easily.

A more substantive problem in postmortems is the hypothetical aspects of the projection. As I mentioned earlier, the assumptions that are the starting points of the exercise are not always completely believable, and they are, in fact, frequently not borne out by events. A real postmortem in these circumstances would consist of substituting facts for assumptions at the relevant points and reworking the projection *de novo*, but this is a test that is not practicable for other than purely algebraic models.

Ignoring these insoluble problems, we can still make a few generalizations from our experience. One is that most of the projections have provided a useful indication as to whether credit demands would be high or low, both in absolute

terms and relative to investment spending and government fiscal balances. Projections for 1959, for example, showed sizable increases in private as well as federal borrowing and concluded that much of the increase would have to be absorbed by private investors' security purchases. Such in fact occurred, but—and this leads to the second observation—we have shown the common tendency to underestimate the volatility of financial flows, and for 1959 we fell far short in our projection from the rise now in our figures. It is broad shifts of this kind, both in credit demand and in forms of credit supply, that appear to be validly indicated by projections of the type we have used.

Forcing the projections into a flow-of-funds mold has unquestionably been useful in projecting unusual market conditions. Projections made without the balance constraints of the matrix have tended to be even more bland in their parts—that is, more conservative in departing from trends—than those put into the matrix. Using the matrix, we have frequently been uncomfortable about the extreme estimates we were forced to project for key cells, only to find, as I just mentioned, that our projection was actually more conservative than it should have been. The matrix is an awkward form of table, and its interlockings are not easy to see at a glance. But it states an important aspect of the workings of the economy, and, as we use it, we see more and more clearly one of the ways in which everything depends on everything else in two days, as Bob Solow once put it.

John C. Dawson

Measuring the Saving-Investment Process

(1964)

Contemporary monetary economics is just beginning to explore the process by which saving is placed with the financial system, passes through various financial markets and institutions, and thence flows into real investment. For most economists the mechanics of this process still remain hidden behind Keynes's consolidated saving-and-investment account. The task of this note is to present a saving-investment process scheme designed for analysis of the U.S. financial system and to define the scheme statistically in terms of flow-of-funds data.

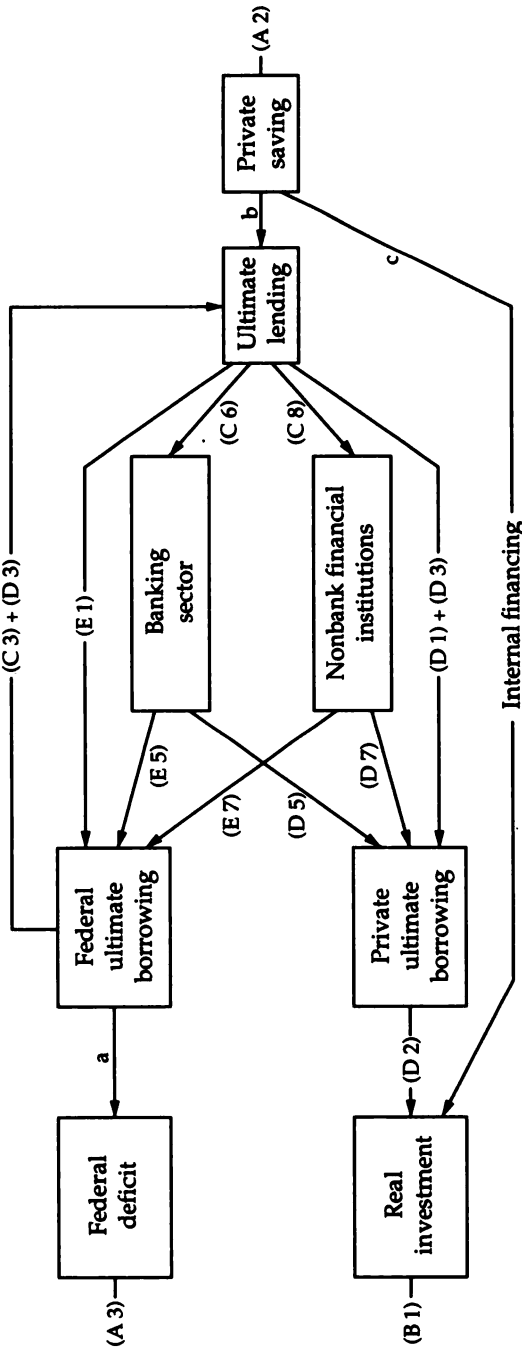
A Proposed Scheme

Figure 10.1 presents a schematic view of the saving-investment process. At the right the diagram shows private saving as flowing either into the internal financing of real investment or into ultimate lending, a term we adopt for placement in financial claims. Ultimate lending flows directly to federal or private borrowing or is placed with banks and other financial institutions. The funds in turn advanced by financial institutions, together with the flows direct from ultimate lending, are the sources for the external financing aggregates, private and federal ultimate borrowing. Real investment, at the left, is financed by private ultimate borrowing and by internally placed saving. And the federal deficit is financed by the federal borrowing that is not returned to the system.

Some brief comments on this version of the process before we proceed. In effect the saving-investment account is here split down the middle, its two halves separated to the right and left, and the financial system inserted between. As a

Excerpted from John C. Dawson, "An Analysis of the Saving-Investment Process, 1953-62" (unpublished paper, 1964): 1-4.

Figure 10.1 Saving-Investment Process



Note: Codes for all flows refer to cells in Figure 10.2.

^a (C1) + (D1) + (E1).

^b (A2) - (C1) - (D1) - (E1).

^c (E4) - (C3) - (D3).

result we see the placement of saving and the financing of investment as two distinct activities. But they necessarily articulate; whatever saving is placed with the financial system necessarily provides external financing of investment. Further, because saving and real investment are both nonfinancial variables,¹ the financial markets are linked to the real economy at each end of the scheme. This linkage is on a flow basis, as we customarily analyze the nonfinancial economy, and is alternative to the linkage based on an aggregate balance sheet.

An important feature of the scheme is its method of separating internal from external finance. Often the difference between saving and real investment is taken as measuring the volume of funds placed with or obtained from the financial system by a particular sector. This may be called the net view of external finance because implicitly it nets debt issue and claims acquisition. This convention is not appropriate for macroeconomic use; since debt issue is equal to claims acquisition in the aggregate, this rule implies that real investment as a whole is entirely financed internally—with no resort to the financial system.

The saving-investment process adopts grosser measures of external finance. A private sector's acquisition of claims measures its placement of saving with the financial system (ultimate lending), the rest of saving being internally placed; a private sector's debt issue measures external financing of real investment (ultimate borrowing), any remainder being internally financed.² For the economy as a whole (apart from discrepancies), aggregate internal placement equals internal financing, and ultimate lending equals ultimate borrowing, as indicated in Figure 10.1.

The federal government is treated differently from the private sector. By convention the federal government has no real investment; the federal deficit measures the financing task. The deficit is financed by federal security issues, but such federal borrowing—unlike private borrowing—is viewed as partly for the purpose of re-lending. Hence the feedback flow to ultimate lending in Figure 10.1. Federal ultimate borrowing, which finances the deficit, is net of federal lending.³

Banks as well as nonbank financial institutions are regarded as intermediaries—that is, as gathering surplus funds and transferring them to those with borrowing needs. This role for banks is a logical corollary of the saving-investment process idea. If saving placed into claims is to be viewed as passing through the financial system to finance investment, then we must account increases in currency and bank deposits consistent with other financial institution claims—that is, as saving entering the banking sector. The familiar distinction between investment financed “out of saving” and financed “by monetary expansion” has no place in the saving-investment process.

We hasten to add that this social accounting treatment of the banking sector and, indeed, any of the other treatments adopted in Figure 10.1 do not commit us to a particular causal interpretation of the process. In particular the arrows on the diagram must not lead us to conclude that saving decisions are the ultimate determinants of financial affairs. These arrows simply indicate the direction of

the flows of funds—for example, from lender to borrower. The size of the flows can be determined either by borrowers or lenders or both. Thus causal forces can move in either direction in Figure 10.1.

A Statistical Specification

We wish now to define the saving-investment process operationally. We do so in two steps: first, by identifying the flows in our scheme on a condensed flow-of-funds matrix (Figure 10.2), and second by specifying the derivation of Figure 10.2 from the standard flow-of-funds matrix. The technical details of our measurements thus will be those of the flow-of-funds accounts. In addition to ease of specification, this method ensures proper completeness and accounting uniformity in the estimates.

To obtain the necessary variables, four sectors are required in Figure 10.2: the banking system (commercial banks, Federal Reserve Banks, Treasury Monetary Funds), nonbank financial institutions (saving institutions, insurance and pension funds, and miscellaneous finance), the federal government, and a private sector covering the rest of the economy (consumers, nonfinancial business, state and local governments, and the rest of the world). Various types of transaction are also aggregated in Figure 10.2. The nonfinancial transactions of each sector are condensed into real investment and saving, the latter being nonfinancial receipts less current expenditures. The grouping of financial transactions provides an analysis into three broad financial markets: those for (1) intermediary claims—the liabilities of financial institutions; (2) federal securities; and (3) private claims—mortgages, consumer credit, corporate securities, bank loans, etc.

All of the flows in Figure 10.1 are keyed to the italicized cells in Figure 10.2 by row letter and column number. And we note that each of the Figure 10.2 cells finds a place on our scheme, apart from miscellaneous transactions and the saving and real investment of the financial sectors. The saving-investment process scheme thus provides a means of interpreting the movements over time in the matrix flows.

The main technical problems in transforming the standard flow-of-funds matrix into Figure 10.2 focus on this question: How can transaction-type data be modified toward the to-whom/from-whom form of the saving-investment process? Combining sectors and transaction types by condensing the matrix takes us a good deal of the way in this direction. In addition, the three main types of financial transaction are defined so that private claims are entirely issued by the private sector and are the only financial source for that sector, and so that similar relations exist between federal securities and the federal government, and intermediary claims and financial institutions. This reduction to zero of a number of the Figure 10.2 cells is accomplished either by shifting offending transactions among the three main transaction groups or into the miscellaneous category. Examples of such adjustments are (1) the shifting of the government liability on

Figure 10.2 Condensed Flow-of-Funds Matrix

Item	Private Sector ^a		Federal Government		Banking Sector ^b		Nonbank Financial Institutions		All Sectors	
	(1) U	(2) S	(3) U	(4) S	(5) U	(6) S	(7) U	(8) S	(9) U	(10) S
A. Saving		142.7	3.8			1.3		1.5	3.8	145.5
B. Real investment	141.0				0.3		0.4		141.7	
C. Intermediary claims ^c	42.2		2.1			19.1		25.2	44.3	44.3
D. Private claims	4.6	51.7	1.9		16.8		28.4		51.7	51.7
E. Federal securities	2.6			6.5	2.5		1.4		6.5	6.5
F. Miscellaneous & discrepancies, net	4.0			1.3	1.3	0.5	2.8	6.3	8.1	8.1
G. Total	194.4	194.4	7.8	7.8	20.9	20.9	33.0	33.0	256.1	256.1

See Figure 10.1.

Note: See Figure 10.1.

^a Households, nonprofit, enterprises, provincial and local government, and rest-of-world.

^b Central bank, commercial banks, and treasury monetary funds.

^c Currency and demand deposits, time and saving accounts, and saving through life insurance and pension funds.

Notes to Figure 10.2

Figure 10.2 is a condensed and adjusted flow-of-funds matrix. The condensation is specified in Part I, the adjustments in Part II. The data in the matrix are for the United States for the fourth quarter, 1962, derived from a four-quarter-centered moving average.

Part I. Condensation of Flow-of-Funds, Table 1, Federal Reserve Bulletin

<u>Figure 10.2</u>	<u>FOF Table 1</u>
Private sector:	Consumer and nonprofit, farm, noncorporate business, corporate business, state and local government, and rest-of-world sectors combined.
Federal government:	U.S. government sector.
Banking sector:	Commercial banks, Federal Reserve Banks, Treasury Monetary Funds sectors consolidated.
Nonbank financial institutions:	Savings institutions (mutual savings banks, savings and loan associations, credit unions), insurance companies and private pension plans, and finance, n.e.c. (security brokers and dealers, open-end investment companies, sales finance companies, etc.) sectors combined.
Saving:	Gross saving. Federal government saving is shown as a use of funds, the federal deficit.
Real investment:	Private capital expenditures (plant and equipment, residential construction, consumer durables, inventory change).
Intermediary claims:	Currency and demand deposits, time and saving accounts, saving through life insurance and pension funds. The currency and demand deposit transaction account discrepancy is allocated to the private and federal sectors.
Private claims:	State and local obligations, corporate bonds and stock, 1-4 family and other mortgages, consumer credit, bank loans, n.e.c., and other loans.
Federal securities:	U.S. government securities, including U.S. savings bonds.
Misc. and discrep., net.	Security credit, trade credit, proprietors' net investment in noncorporate business, miscellaneous financial transactions, gold and treasury currency. Sector discrepancies plus rounding errors.

Part II. Adjustments to Flow-of-Funds Transaction Categories

1. State and local government construction is added to private sector saving and real investment.
2. Federal, state, and local government liability a/c life insurance and pension fund reserves is shifted from intermediary claims to miscellaneous.
3. CCC-guaranteed bank loans are shifted from private claims to federal securities.
4. Finance company open-market paper taken by corporations is shifted from private claims to intermediary claims.
5. FHLB loans to savings and loan associations is shifted from private claims to intermediary claims.
6. The following items (which it is presumed would wash in consolidating the banking and nonbank financial institution sectors) are shifted to the miscellaneous transaction category:
 - a. bank loans to nonbank financial institutions
 - b. bank issue of corporate stock
 - c. finance company paper issues not taken by corporations
 - d. currency and deposits held by nonbank financial institutions
 - e. finance, n.e.c., security issues.

account of life insurance and pension fund reserves into miscellaneous transactions and (2) the shifting of certain credit market instruments issued by financial institutions into intermediary claims.

To eliminate flows between banks and other financial institutions, various transactions were moved to the miscellaneous category and netted. The procedure amounts to consolidating the accounts of the two groups of financial institutions, items that would wash being shifted to miscellaneous. In this way only flows between financial institutions and nonfinancial sectors remain in the italicized cells of Figure 10.2. Among the items affected here are bank loans to other financial institutions, bank deposits held by other financial institutions, and the security issues of investment companies.

All these various adjustments to the basic flow-of-funds data are enumerated in the notes to Figure 10.2.

Notes

1. Investment here includes consumer durables and state and local government construction. No investment is attributed to the federal government. Throughout the note investment and saving refer to gross rather than net concepts.

2. We net the sector's sources and uses of funds account differently for each viewpoint. To observe the placement of saving, we net debt issue against real investment; to observe the financing of investment, we net claims acquisition against saving. For any sector the two measures of internal finance (investment minus debt issue and saving minus claims acquisition) are equal, but the measures for external placement and external finance will ordinarily differ.

3. State and local governments are treated as analogous to private sectors and are included with them. State and local construction, included in real investment, is financed by state and local borrowing; state and local government saving remains in private saving.

JAMES S. EARLEY, ROBERT J. PARSONS, AND
FRED A. THOMPSON

Source and Use Analytics

(1976)

The major theses of this paper are two: First, in a modern financial economy such as the United States, changes in credit flows are the primary financial variables causing changes in total money spending on goods and services. Second, in such an economy changes in the money stock as commonly defined play only a secondary role and are unreliable and indeed misleading as “targets” for monetary and credit policy.

These theses are, of course, not revolutionary. In fact, they underlie that wide group of theories stressing interest rates and credit conditions as important variables explaining changing expenditures. The stubborn problem is to make the case convincing, both theoretically and empirically. This first part sets forth a somewhat novel analytical approach and suggests its major implications for these and also “monetarist” theses. A second part [not included here—Ed.] presents relevant empirical tests.

The Basic Approach

Our basic approach is to examine systematically how expenditures of goods and services are *financed*, using a widened version of sources and uses of funds (S&U) and flow-of-funds (FOF) analysis. Our S&U analysis is much broader than the usual type, which analyzes only certain financial aspects of capital accounts. Our sources and uses analysis embraces in principle *all* “expenditures” and “receipts,” whether on “capital” or “income” account, and uses S&U analy-

Excerpted, with permission, from James S. Earley, Robert J. Parsons, and Fred A. Thompson, *Money, Credit, and Expenditure—A Sources and Uses Approach* (New York: New York University Center for the Study of Financial Institutions, *The Bulletin*, 3 [1976]): 1–18. The extensive footnotes are omitted.

sis to help explain changing expenditures in the goods and services markets. This simple technique serves as a useful device to make sound choices between “monetarist” and “Keynesian” doctrines.

Sources and Uses of Funds

Sources and uses of funds can be classified in widely differing detail. From the standpoint of expenditure variation, the fundamental division, for both sources and uses, is between goods and services (G&S) and financial accounts. In a limited sense, receipts on goods and services account are the “normal and enduring” source and expenditures on goods and services are the normal use of funds for the microunit. But any microunit can also secure funds on financial account and can use funds on financial account rather than on goods and services. Such financial sources and uses, as we shall see, are peculiarly associated with *changing* expenditures.

Sources of funds on G&S account are here termed receipts (R); uses of funds on G&S account, expenditures (E). Sources of funds on financial account include the disposal of financial assets (FA) and borrowing. In an economy without credit, the only financial asset is money, and the only financial source of funds the running down of money balances. But in an economy with a credit system, newly borrowed funds and the disposal of nonmonetary financial assets created by earlier borrowing are additional sources of funds on financial account. In the modern economy, the disposal of financial assets includes: (a) the sale (or redemption) of financial assets that (normally) earn money income but are not directly usable for making payments (e.g., market securities, time claims on financial institutions); and (b) the running down of holdings of “money,” which is FA (normally) yielding no income but directly usable as a means of payment. We will label all nonmonetary FA as FAe, and money as M. In addition, funds can be secured by borrowing—i.e., by an increase in liabilities (Liab). (The floating of new corporate equity can be treated as “borrowing.”)

Sources and uses of funds are each seen to constitute sets of which some elements are positive and others negative. S&U equations are therefore equations in absolute rather than algebraic values. We symbolize this by attaching appropriate plus and minus signs to the elements. Thus total sources of funds for microunits or sectors are expressed as:

$$\begin{array}{l} (G\&S) \qquad \qquad \qquad [Financial] \\ (R) + [(-\Delta FAe) + (-\Delta M) + (+\Delta Liab)] \end{array}$$

Nonfinancial uses of funds comprise all E on G&S. Financial uses, like financial sources, are classified into the acquisition of nonmonetary assets (+ ΔFAe) and M (+ ΔM), and the repayment of debt (− $\Delta Liab$).

Financial Surpluses and Deficits

The absolute value of uses (or sources) for each element or subset determines whether a microunit is in "surplus" or "deficit" with respect to that component. Similarly, a microunit may be in surplus or deficit with respect to its total G&S or total financial account. But since total sources and uses must be equal, a surplus of E over R on G&S account must be balanced by an equal financial deficit, and vice versa.

These financial surpluses and deficits are the fundamental elements in our analysis. They are the correlatives of saving and investment in modern income theory. "Running a financial surplus" means spending less on G&S during any period than received on G&S account ($E < R$), and devoting the difference to building up FA (including M), decreasing liabilities, or both. By doing this, a microunit tends to *reduce* aggregate expenditures on G&S (hereafter termed ΣE), since it pays over to others on G&S account less than it receives from them. Units running financial deficits ($E > R$), on the contrary, spend more on G&S than received on G&S account; this tends to *increase* ΣE . In general, when funds secured from financial sources are used on G&S account, ΣE (and normally also aggregate money income) tends to rise; when funds from G&S sources are used on financial account, ΣE and aggregate income tend to fall.

Using the appropriate components of sources and uses of funds, an identity equation for any component source or use can be derived, provided it is specified that negative values for changes in FA denote a source, and negative values for changes in liabilities constitute a use. For example, the basic equation for the E for a microunit (or economic sector) is:

$$E = R + [(-\Delta FA_e) + (-\Delta M) + (+\Delta Liab)]$$

It follows from this equation that a *change* in E by any microunit or sector can be "explained" by changes in its R and movements in its components on financial account. An increase in its E may be "financed" by an increase in its R (i.e., increased receipts from others on G&S account), by an increased financial deficit, or by a decreased financial surplus. And changes in any component of the financial accounts (e.g., net lending) can be analyzed as resulting from changes in the other components. We will make much use of these relationships, theoretically and empirically.

There is a fundamental difference, however, between changes in a unit's E that result from changes in its R and those that result from its transactions on financial account. Changes in a unit's R must come from changes in E by some other unit or units, and in analyzing changes in aggregate E these latter must in turn be explained. *Ultimately, changes in aggregate E trace back to changes in micro expenditure initiated on financial account.* It is this "financing" of changes

in E, and the role that money and credit play in them, that is the focus of our analysis. To encapsulate, we see fluctuations in borrowing as the primary cause of changes in spending. Monetarism sees the primary variable as the running down or building up of money balances.

The Theory in Outline

A number of analytical and behavioral propositions constitute our theory. We develop them further and test some of them below.

1. In the contemporary economy, changes in ΣE have their origins in changes in financial surpluses and deficits initiated by microunits.
2. Unequal changes in these "initial" or *ex ante* surpluses and deficits lead to changes in ΣE that equate aggregate surpluses and deficits *ex post*.
3. Deficit spending is more volatile than the disposition to run financial surpluses; hence changes in deficit spending are normally the major initiating factors leading to changes in ΣE .
4. The major source of deficit financing, moreover, is borrowing; financing deficits by running down FA (especially M) is severely constrained.
5. The *sources* of borrowed funds are not confined to financial surpluses, and financial surpluses can be *used* for purposes other than lending. The sources of loanfunds can include also the running down of money balances, the sale of existing FAe, and borrowing by financial intermediaries. The funds secured by running financial surpluses can similarly be devoted to other uses included in the S&U equations besides lending. It is these many "loose couplings" in the credit markets that explain the power of credit to alter total expenditure.
6. The influence of credit on E is not confined to bank money creation or destruction. It extends to the total credit operations of banks, to credit extended by nonbank financial institutions (NBFIs), and even, although less potently, to credit between nonfinancial (NF) units.
7. Lending that leads to changes in the stock of M is somewhat more potent than other lending in bringing about changes in ΣE , primarily because it is sometimes more loosely coupled with concurrent financial surpluses.
8. But the influence upon ΣE of credit-created changes in the M held by *nonfinancial units*, while significant, is definitely secondary.
9. Flows of funds between banks and nonbank financial intermediaries (NBFIs) are large and in toto only loosely coupled with concurrent financial surpluses; changes in these flows can be a major cause of changed aggregate lending and changed ΣE .
10. Microunits experiencing a change in R normally alter their E in the same direction. These induced changes in spending provide *additional* factors leading to substantial fluctuations in ΣE .

Expenditure Without Credit

The sources and uses of funds technique can be used to analyze a broad range of matters. We employ here only a small sample of constructs or models designed to examine the general roles of money and credit in bringing about changes in E .

We start with analysis of a monetary economy without credit. In such an economy, the S&U equation for the E of any microunit is simply $E = R + (-\Delta M)$, since in the absence of credit there is no FAe to dispose of and no opportunity to finance E by borrowing. A deficit can be financed only by disposing of M , and a surplus can be used only to accumulate it. This is essentially the monetarist model.

A highly simplified two-sector model (Figure 11.1) will both illustrate the nature of the S&U approach and show the limited possibilities of large changes in ΣE in the absence of credit. The economy is divided into deficit (D) and surplus (S) sectors. Figure 11.1 traces the transactions on G&S and on financial account for each sector and for the total economy. It is assumed that the E of each sector is spent on G&S sold by the other. In the absence of a clearing mechanism, such as could be provided by a credit system, E and R represent transfers of tangible money, but financial sources and uses of money arise only where there are sector imbalances on G&S accounts.

Case 0 is the standard case of unchanging ΣE . E and R , and hence money payments, are balanced between the sectors. There are no surpluses or deficits and no transactions on financial account. In this case, ΣE continues at a constant level.

In case 1, that of rising ΣE , the D sector initiates change by increasing its E above E_0 , financing the deficit by running down its M (line a). This raises R and M for sector S . If sector S nevertheless maintained its E at E_0 , its surplus would equal sector D 's deficit and the process of expansion would cease. We postulate, however, that sector S 's increased R and M persuade units in sector S to increase their expenditure on goods and services, although by less than the rise in their R (line b). This "multiplier feedback" reduces sector D 's deficit but does not eliminate it. For our present purposes we may assume that the "feedback" and "multiplier" stop here. ΣE will, of course, rise until the surplus of sector S equals the adjusted deficit of sector D .

Case 2, that of decreasing ΣE , is presumed initiated by the S sector reducing its E (E_2) below E_0 . The tabular presentation can be abbreviated. The D sector, suffering a decline in its R , cuts its E , but by less than its reduced R . There is a transfer of M from the D to the S sector to balance their G&S accounts. Both reductions of E , of course, reduce ΣE , which will fall until the deficit of sector D equals the adjusted surplus of sector S .

Interesting games could be played with this model. Let us simply note the severe constraints on fluctuations in aggregate spending when, as here, deficits must be financed solely by reduction of money holdings, and surpluses must be devoted solely to their accumulation.

Figure 11.1 Changing Expenditure Without Credit

	Deficit (D) Sector		Surplus (S) Sector		Financial		Total Economy	
	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources
Case 0 Unchanged E	E_0	$= R_0$	E_0	$= R_0$	-0-	-0-	$\Sigma E_0 = \Sigma R_0$	
Case 1 Rising E	a) E_1 ($> E_0$)	$-\Delta M$	$+\Delta M$	R_1 ($> R_0$)			$\Sigma E_1 = \Sigma R_1$ ($> \Sigma E_0$) ($> \Sigma R_0$)	
	b) E_1 ($< E_0$)	$+\Delta M$ ($< -\Delta M$)	E_1 ($> E_0 < R_1$)	$-\Delta M$ ($< +\Delta M$)	-0-	-0-		
Case 2 Falling E	E_2 ($< E_0 > R_2$)	R_2 ($< R_0$) $-\Delta M$	E_2 ($< E_0$) $+\Delta M$	R_2 ($< R_0 > E_2$)	-0-	-0-	$\Sigma E_2 = \Sigma R_2$ ($< \Sigma E_0$) ($< \Sigma R_0$)	

Nonfinancial units, especially those disposed to run deficits, will normally carry small stocks of M relative to their E , and even moderate deficits will seriously threaten their liquidity. If they cannot hope to restore it by borrowing or by selling other financial assets, they will not run substantial deficits. Since the main variability of spending stems from initial variations in deficits rather than surpluses, variations in ΣE are likely to be small. The fact that surpluses can be used only to accumulate M , at the expense of the M of the deficit sector, rather than being lent to deficit units, will also constrain buoyancy of ΣE . Constraints also operate against large decreases in ΣE . The falling R of surplus units as ΣE falls tends to reduce financial saving. The fact that financial saving cannot be used to acquire FA yielding pecuniary income will also inhibit the running of surpluses.

There are additional constraints in this model. As the right-hand side of Figure 11.1 shows, there are no net sources and uses of funds for *the economy as a whole* in either case 1 or case 2. Neither changes in net borrowing and lending nor changes in aggregate M tend to contract or expand spending. Changes in overall liquidity positions also impart stability, for any changes in ΣE cause constraining shifts in the ratio of aggregate M to aggregate E and R . *All* of the above factors (not only the stability of M) operate to keep the range of variation of ΣE narrow in this simple creditless economy.

Direct Credit and Changing Expenditure

Credit widens potential fluctuations in spending by adding two potent variables, $\Delta Liab$ and ΔFAe , to the financial sources and uses of funds. For brevity we confine analysis to the more potent of these variables, $\Delta Liab$, although the flexibility of spending imparted by the opportunity to finance deficits by selling stocks of existing FAe to others is considerable. The full potency of credit in causing variations in spending becomes evident only later, when financial intermediation is included in the model. The present section simply uses $S\&U$ analysis to demonstrate how even direct credit between nonfinancial (NF) units can cause significant variation in total spending, a proposition that most monetarists dispute.

Figure 11.2 illustrates a very simple "credit cycle," involving credit extension and later repayment. To lend concreteness to the illustration, numerical levels of the variables are specified. We use a crude period analysis, starting with a reference period in which expenditures between our two sectors, now labeled borrowers (B) and lenders (L), are balanced. It should be kept in mind that the L sector includes not only lenders but also all nonborrowing microunits.

In period 1 (line a), the B sector secures a loan of $2M$ from NF lenders, which it uses in line (b) to increase its spending to 22, thus running a deficit of 2. In period 1, we assume, the L sector simply uses the excess of its R (22) over its E (20) to restore its M to its preloan level. Surpluses and deficits are balanced. ΣE has risen from 40 to 42, financed by the loan, which permitted sector B to increase its E without sacrificing cash liquidity.

Figure 11.2 Direct NF Credit and Changing Expenditure

Period 0 Balanced Es & Rs	NF Borrowers (B)		NF Lenders (L)		Total Economy		G&S	
	Uses	Sources	Uses	Sources	Financial		Uses	Sources
	E20	R20	E20	R20	-0-		ΣE40	ΣR40
Period 1								
Credit	a) +ΔM2	+Liab 2	+ΔFAe2	-ΔM2	+ΔFAe2	+Liab 2		
Expansion	b) E22	R20 -ΔM2	E20 +ΔM2	R22	-0-		ΣE42	ΣE42
Period 2								
"Feedback"	E20 +ΔM2	R22	E22	R20 -ΔM2	-0-		ΣE42	ΣE42
Period 3								
Credit	a) -ΔLiab 2	-ΔM2	+ΔM2	-ΔFAe2				
Contraction	b) E20	R20	E20	R20	-ΔLiab 2	-ΔFAe2	ΣE40	ΣR40

In period 2 it is assumed (arbitrarily) that there is complete "feedback" of sector B's period 1 deficit by increased E of sector L. This maintains ΣE at 42 despite sector B's reducing its E back to 20. In this period, it will be noted, it is sector L that runs the current deficit, which maintains ΣE at 42. Sector B runs a corresponding surplus, using it to increase its M. No "expenditure multiplier" is operative in this special case.

In period 3 Sector B uses its increment of M to repay its loan, thus restoring the M of both sectors to their original levels. But unless either sector is inclined to maintain or resume deficit spending, total ΣE will fall back (in our suppositional case to 40), where E and R between the sectors are again balanced. Note that at the economy-wide level the sources and uses of funds in period 1 are positive and in period 3 are negative. According to our theory, it is these positive and negative changes in the aggregate sources of funds for G&S spending that cause the fluctuating ΣE . To maintain ΣE at the higher level of 42 would require a resumption of net borrowing and lending.

The major formal difference between Figure 11.2 and Figure 11.1 is that there are now financial sources and uses of funds at the economy-wide as well as the sector levels. It is these sources and uses of funds (concretely the net borrowing and lending) that finance the increased E in period 1 without the borrowers losing cash liquidity. It is this encouragement to deficit spending that constitutes the essential expansionary influence of credit.

But is not this encouragement offset by equal constraint on the spending of others? Quite clearly not. First, note that only actual lenders, not other NF units, lose cash even temporarily. *Prima facie*, the lenders are better able and more disposed than the B units to give up cash. That they lend indicates that they prefer FAe to M at the margin. Second, even credit among NF units frequently involves debtors securing finance for "lumpy" E by borrowing relatively small amounts from a number of creditors. "Marginal" losses of M are less serious than large ones. Third, the nonborrowing sector as a whole loses M *only temporarily*. The borrowed funds are spent in the G&S markets and return to the other sector. It is the rising R of the surplus sectors, not decreased money holdings, that ultimately "finances" the deficit.

The Influence of Financial Intermediation

Our remaining models deal with the influence of financial intermediation (FI), and changes in the supply of money, on the variability of total spending. For generally well-understood reasons, financial intermediation—borrowing for the purpose of lending—increases the volume of borrowing and lending. Our S&U equations suggest, and further analysis shows, that FI also carries strong tendencies toward both secular growth and short-term instability of total spending.

It now becomes necessary to incorporate the relevant features of the monetary

and financial system into our models. Although much simplified, the following features mirror the essential nature of the U.S. monetary system: (1) It is assumed that FIs operate only on financial account and run neither surpluses nor deficits. (2) FIs are of two broad types: commercial banks (banks) and nonbanks (NBFIs or NBs), the salient difference being that a portion of banks' liabilities are demand deposits (DDs) subject to check and thus usable as means of payment. Both banks and NBs also borrow time-dated funds, which we will call time deposits (TDs) of banks and claims (Cl) on NBs. (3) Bank DDs, it is assumed, constitute the *sole* "means of payment" (M) for both NFs and NBs. (4) A central bank (CB) holds the "means of payment" (M) of the banks, but holds no funds for either NBs or NFs. (5) Banks are required to hold funds at the CB as "reserves" against their liabilities. (6) These required reserves are distinctly higher against DDs than against time-dated bank liabilities. (7) The CB lends only to banks, but buys and sells types of existing securities held in significant amounts by banks and NBs. (8) It is assumed that there are no flows of currency (or gold) into, out of, or within the financial system; all payments are carried through by "clearings"—that is, by debits and credits to the appropriate accounts at the banks or the CB. (9) Both banks and NBs acquire *newly issued* FAe (hereafter called *Loans*) and also buy and sell *existing* FAe (hereafter designated securities—*Sec.*).

Simple models analyzing the influence of nonbank and bank credit operations on ΣE are set forth in Figure 11.3. NF borrowers are assumed to be deficit units. Other NF units *may or may not* be surplus units. "Feedback" of E to borrowers is ignored for simplicity; any "expenditure multiplier" is presumed to operate entirely within the other NF units sector. For brevity, only rising expenditure is analyzed.

Nonbank Financing

The top panel of Figure 11.3 analyzes financing by nonbank financial intermediaries. These may secure funds for lending by running down their M (DDs at banks), by selling securities ($-\Delta Sec$), or by borrowing. NBs often borrow from banks; but the standard source of funds for most important NBs is borrowing from NF units, which acquire claims (Cl) on them by transferring funds from their DD accounts at banks. This transfer, as shown on line (a), simply shifts ownership of DDs from NF units to NBs without changing the total level of DDs.

The transferred funds are lent to NF units in line (b). The NF borrowers spend the funds in line (c). Line (d) indicates the operation of a "multiplier."

In terms of S&U analysis, a major formal difference between this and the NF credit model in Figure 11.2 is that for the economy as a whole there are here *two* sets of FAs and corresponding liabilities created instead of one. NF units lend to NBs, which lend to other NFs. The NF borrowers presumptively secure funds that would not otherwise have been available to them, or if so only on less

favorable terms owing to the greater attractiveness of NB obligations than their own and the greater expertise and "aggressiveness" of the NBs. Note that the initial source of loan funds may be merely a shift in the form in which economic units elect to hold their FA. *A concurrent financial surplus is not necessary.* But the subsequent spending will make aggregate R rise, thus creating surplus units in line (c).

Finally, note that the transfer of funds from banks to NBs does not adversely affect the reserve position of the banks. At all stages, (a) to (d), credits to the bank accounts of one party offset debits to others, and the banking system as a whole loses no loanable funds. *It is evident that flows to NBs are conducive to total lending*, since, whether they reflect financial surpluses or are mere shifts of funds, they create loanable funds for NBs without reducing the loanable funds of the banks. For all these reasons NBs normally make credit "easier," net lending larger, and ΣE potentially less stable than if all credit transactions were directly between NF units. It is primarily the stimulus to *lending*, and only secondarily the increased liquidity of "near moneys," that accounts for the expansionist influence of nonbank financial intermediation, according to our theory.

Bank Financing

The middle section of Figure 11.3 illustrates "typical" (now somewhat old-fashioned) bank financing, in which the banks lend by crediting borrowers' DD accounts. This lending finances the added E in line (b), which raises the R of other NF units. The initial lending may require the presence of excess reserves ($-\Delta M$) of individual banks, but the source of funds financing the lending is the added DD liabilities of the banking system.

The formal differences between this and the NB lending case, the figure shows, are two: In the NB lending case NF units lent to NBs to provide the initial loan funds, whereas in bank lending we provisionally presume that banks had discretion to act without this initial lending. The second difference is that for the total economy bank rather than NB liabilities are expanded, and these bank liabilities, at least initially, are in the form of the means of payment used by the NF sectors.

In assessing the significance of these differences, we should first note that the DD holders may convert them into interest-earning TDs if they choose. The bottom section of Figure 11.3 illustrates this very important case. On line (a) holders of DDs convert them into TDs. Under laws or conventions permitting lower reserves against TDs than DDs, the banks now have excess reserves. In line (b) they therefore lend more funds to NFs. We observe a basic contradiction in monetarism when applied to contemporary banking. Far from an increase in "money" being a necessary condition for banking stimulus to ΣE , *the banks can lend more, and the total stimulus to ΣE will almost certainly be greater, if less rather than more "money" is created.*

INTERNATIONAL MONETARY FUND INSTITUTE

Financial Programming*(1981)*

A financial program is a set of coordinated policy measures—mainly in the monetary, fiscal, and balance of payments fields—intended to achieve certain economic targets in a relatively short period of time. The task of setting economic targets, choosing policy instruments, and quantifying the appropriate magnitudes of the instruments required to reach the targets is described as financial programming.

Nature of Financial Programming

Financial programming is based on the assumption that there is a relatively stable relationship between financial variables (such as money and domestic credit), on the one hand, and nonfinancial variables (such as real national income and prices), on the other hand, and that the monetary authorities can control some of the financial variables so as to affect the real side of the economy. Although financial variables are emphasized, nonfinancial policy measures are also often included in financial programs.

A financial program such as the one described below for Kenya is prepared with the purpose of achieving or maintaining a desirable balance between real income and real absorption.¹ Consideration is also given to changes in prices, international reserves, and the exchange rate. The desirable balance between real income and real absorption and the desirable level of prices, international reserves, and the exchange rate are policy objectives that must be set by the authorities of a country. If the program assumes a substantial inflow of capital from abroad, then the policies must be attuned to this objective as well.

Financial programs that cover a short period of time, such as twelve months,

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and that are designed to reduce the imbalance between real income and real absorption with reasonable price stability and a given target of international reserves, usually focus on eliminating the most serious distortions that have held back output and on restraining the rate of increase of absorption. Even in such short-run programs, however, attention is given to stimulating the rate of growth through a better allocation of financial and physical resources. In a financial program covering an extended period, such as three years, the authorities consider longer-run policies to bring about a balance between real income and real absorption in order to keep inflation within acceptable limits and to promote a sustainable rate of growth. These could include policies to eliminate structural imbalances, measures to stimulate investment, adjustment of exchange rate and pricing policies to bring about a more desirable resource allocation, measures to promote financial markets, and a reform of the fiscal system.

Financial programming is used in a number of countries, even when the economic situation is satisfactory, in order to ensure further economic progress. However, it is essential to undertake financial programming when, for example, the domestic use of resources or real absorption tends to exceed real income by more than the desired amount and there are excessive price increases or large payments imbalances.

Techniques for Formulating a Financial Program

Various techniques, in principle, may be used to formulate a financial program. If adequate data are available, as well as computing facilities and time, a large-scale econometric model could be built; and if the model is sufficiently reliable (that is, the statistical tests were satisfactory and simulation showed that the model "tracked" quite well over the sample period), it could be used to prepare a financial program. The procedure would be to fix the targets to be achieved in a specific period of time and, after inserting the forecast values for the exogenous variables, the required values of the policy instruments could then be calculated either by solving or simulating the model.

The computed values of the policy instruments would be subject to various errors associated with this type of analysis—namely, errors in the statistical data used, in the specification of the model, in the estimation procedure, and in forecasting exogenous variables. Furthermore, the stability of the behavioral relationships that are the linkages between variables in the model cannot be taken for granted outside the sample period; this is especially true for a developing economy undergoing rapid structural change. Hence, in the ultimate analysis, judgmental considerations would influence the final decision on the precise values of the policy instruments.

The desirability of having a comprehensive econometric model arises, in part, because a simple model may not accurately portray the structure of the economy and, in part, because the authorities of a country may be concerned with more

objectives than the simple model can handle. Even in financial programs where the major objective is a reduction in the balance of payments deficit, the measures aimed at achieving it (such as credit restriction, reduction of the budget deficit, and a change in the exchange rate) usually involve costs in terms of disposable real income that may severely affect certain groups or sectors. The authorities may, therefore, use other policy instruments to minimize these costs—that is, they may utilize multiple policy instruments to achieve multiple targets simultaneously. A comprehensive econometric model will permit the investigation of the effects on all relevant variables of the policy measures that may be used.

When the construction of a comprehensive econometric model is not feasible, it may be necessary to adopt a more pragmatic approach. Nevertheless, the approach must be one that permits judgment of the likely effects of proposed policy actions. On the basis of this pragmatic approach, the authorities should be able to decide on a mix of politically acceptable policy actions that permit the attainment of the primary objectives. One of the various possible methods, which is presented only as an illustration, is described below.

Steps in the Financial Programming Exercise

As a starting point, the values of the exogenous variables needed for the preparation of a financial program may be estimated for the program period—say, the next twelve months. These variables are those over which the current economic policy of the country has relatively little influence during that period, such as the foreign demand for its exports. The next step is to fix tentatively the values of the target variables and to “envisage” the policy actions that may be necessary to achieve such targets, given the values of the exogenous variables. At the outset, a decision must be made whether an adjustment in the exchange rate (a key ingredient in the envisaged policy “mix”) is required in the light of recent, as well as expected, changes in either domestic prices and costs or external factors. If a policy mix is found to be inadequate to achieve the desired targets without an exchange rate adjustment, such an adjustment may have to be envisaged; in this event, a new set of policies consistent with the new exchange rate would be formulated. After this preliminary work, it is necessary to check whether the envisaged policy actions are appropriate to achieve the results expected of the financial program.

A convenient procedure is to estimate the values, for the next twelve months, of the various items appearing in a monetary or financial survey. These estimates should be made on the basis of the assumed values for the target variables and the exogenous variables. Thus, starting with the monetary survey “net foreign assets” may be taken as a target variable on the basis of a given exchange rate. This is likely to be the procedure followed in financial programs for countries that have a deficit in the balance of payments and have a low level of interna-

tional reserves. Accordingly, a value that is desirable in view of the circumstances is assigned to this item.

The next step is to estimate "money." This is done on the basis of a demand for money function. It is frequently necessary to estimate several different specifications of the demand for money function, including different coverage of the variables in the relationship, in order to find the one that is reasonably satisfactory, i.e., where the relationship is plausible and relatively stable and where the probable magnitude of prediction errors is relatively small. However, in practice, many estimates of the demand for money function contain prediction errors that are uncomfortably large. This leaves room for judgmental considerations to be used in the projection.

If the demand for money is a function of nominal income alone, estimates of the real income and the level of prices over the next twelve months are needed in order to obtain the estimate for money.

The rate of growth of real national income is a policy objective that must be realistic and also be consistent with the other policy objectives. Hence, there is no simple and easy way to estimate rate of growth of real national income over the next twelve months. It depends on numerous and complex relationships that underlie aggregate supply and demand. On the supply side, perhaps one of the crudest but simplest ways is to investigate the growth of real output over the last few years and then to consider any new factors that are likely to affect real output over the twelve-month period. These would include factors affecting agricultural output, particularly in primary producing countries; new plants and equipment coming on stream; measures to increase the rate of capacity utilization, such as changes in import restrictions, particularly on raw materials and semifinished products, and in credit allocation; and changes in the labor force.

On the demand side, it is necessary to consider fiscal, monetary, exchange rate, and incomes policies, as well as economic conditions in the rest of the world that affect the prices and volumes of exports and imports. A simultaneity problem occurs in the estimation of real income. The estimated real income, which is used to estimate the demand for money, is in part determined by the monetary and fiscal policy stances. However, the domestic credit derived from the estimated demand for money (see below), given the amount of net foreign assets, may not be consistent with the monetary and fiscal policy stances envisaged initially. This implies that real income, the demand for money, and the monetary and fiscal policies must be determined simultaneously. Operationally, this difficulty may be circumvented by making general assumptions about the effects of these policies and by checking later to see whether these are borne out by the calculations. Thus the estimated level of the real national income has to take into account the exogenous factors, as well as the effects of the initially envisaged monetary, fiscal, exchange rate, and incomes policies.

The level of prices over the next twelve months is a target variable. However, as in the case of real national income, the value of this target cannot be set arbitrarily. The prices of imports and exports in foreign currency may be largely outside the sphere of influence of the authorities of the country. The prices of domestic products for the home market may change not only because of events that have already occurred (such as an increase in the wage rate, already granted) or because of likely events over which the authorities have no control, but also because of monetary, fiscal, exchange rate, and incomes policies. The complication of simultaneity again arises—namely, that the level of prices is used to estimate the demand for money, which in turn, together with the supply of money, influences the level of prices. This implies that the demand for money, the supply of money, and the level of prices must be determined simultaneously. A procedure similar to the one described in connection with the estimation of real national income may be used here.

If the demand for money is a function of other variables besides nominal income, such as the expected rate of inflation or the expected rates of return on competing financial assets, these have to be estimated before the amount of money demanded can be calculated. The expected rate of inflation may be inferred from the already estimated level of prices over the next twelve months. Established techniques for generating expectation, such as adaptive expectation or rational expectation, can be utilized. Similarly, the expected rate of interest may be estimated on the basis of the stance of monetary policy and certain behavioral assumptions concerning expectation.

The next step involves the estimation of “quasi-money.” Generally, quasi-money is explained by the same variables as those operating in the demand for money function, or by closely related variables. However, the interest rates on savings and time deposits tend to influence the demand for money and the demand for quasi-money in opposite directions.

For “other items (net)” in the monetary survey, it is useful to check whether this component changes very much from year to year. If it does, the cause of its variations should be investigated so as to derive some basis for estimating the numerical value of this item twelve months hence.

Once money, quasi-money, and other items (net) have been estimated and the target value for net foreign assets has been fixed, the amount of domestic credit of the banking system twelve months hence can be calculated; that is:

$$DC_t = MO_t + QMO_t + NOI_t - NFA_t \quad (1)$$

where *DC* stands for domestic credit, *MO* for money, *QMO* for quasi-money, *NOI* for other items (net), *NFA* for net foreign assets, and the subscript *t* stands for the value of the variable at the end of the twelve-month program period.

Thus, in order to reach the specified target for net foreign assets, the authori-

ties would have to ensure that domestic credit created by the banking system during the next twelve months (ΔDC_t) does not exceed the amount

$$\Delta DC_t = DC_t - DC_{t-1} \quad (2)$$

where DC_t is given by equation (1) and the subscript $t-1$ stands for the value of the variable at the beginning of the twelve-month program period.

If it is believed that the credit expansion can be limited to the amount calculated in equation (2) without upsetting the estimates of the macroeconomic variables, such as real income and prices, used in estimating the items in equation (1), then the calculated overall credit expansion is considered to be consistent with the policies initially envisaged. However, it is only rarely that the amount of credit expansion calculated in equation (2) turns out to be consistent with the policies initially envisaged, as well as with the estimated values of other variables in the economy. Furthermore, the amount of credit expansion yielded by equation (2) does not indicate how the new credit is to be allocated, for example, between the government and private sectors. Therefore, it is useful to continue the work and to project (on the basis of the estimated exogenous variables and the policy actions) government sector revenue and expenditure, private sector income and expenditure, and the major components of the balance of payments, in order to ensure the internal consistency of the financial program.

On the basis of the forecasts of national income and its major components (e.g., consumption, imports, etc.), it may be possible to estimate the bulk of government revenue. Typically, in fact, the major part of government revenue depends on income, consumption, exports, and imports, as well as on the tax structure and the envisaged changes in tax laws and in collection procedure. Implicit or explicit assumptions must already have been made about government expenditure in estimating the national income. Any change in the exchange rate would also affect estimates of government revenue as well as expenditure. The resulting budgetary deficit, if any, may or may not be such that it can be financed through government borrowing abroad, which is reflected in net foreign assets in equation (1) or by the expansion of domestic credit calculated on the basis of equation (2). If such financing of the government is feasible, then the exercise can proceed. Account should be taken of the fact that the private sector and the rest of the public sector also need bank credit to finance their economic and financial activities. Therefore, the entire amount of the calculated credit expansion is not available to finance the government deficit. If the deficit cannot be financed by borrowing from the banking system or abroad, various possibilities are open—such as borrowing from domestic nonbank sources, increase in taxation, or reduction in government expenditure below the level initially envisaged. But if some of these policy actions change the values of the endogenous variables already used to calculate credit expansion (such as net foreign assets, real national income, and prices), the calculated expansion of credit would also

change. If this is the case, the initially envisaged policies are obviously not compatible with the objectives and therefore the exercise must be repeated with different policies or objectives. It may require several iterations before a consistent set of values for the relevant variables is obtained.

On the basis of the forecasts of the state of the world economy and of domestic supply and demand, exports and imports may be estimated. For the values of exports and imports in domestic currency, assumptions about exchange rate policies have to be made. In estimating private capital movements in a country where the exchange system is free of restrictions on capital transactions, it is necessary to take into account domestic interest rates in relation to the interest rates in international money and capital markets. For other items of the balance of payments, it is necessary to use the information available and to investigate the relationships in each specific case. If these estimates yield a value for the outturn of the balance of payments that is compatible with the target for net foreign assets fixed in calculating the credit expansion, the exercise can proceed further.

If the outturn in the balance of payments is not the desired one, different policies (including possibly a different exchange rate) will be required, and these will inevitably affect the endogenous variables used elsewhere in the calculations. Thus it would be necessary to start all over again with fresh assumptions about the policies to be undertaken and perhaps new values for the target variables. This process would continue until policy measures are found that are compatible with the values of the target variables, given the estimated exogenous variables.

The next step would be to calculate the expansion of central bank credit that is compatible with the expansion of banking system credit. This step would be necessary in order to give the authorities an instrument that is essential for both the execution and control of a financial program. Some countries, for a variety of reasons, have strong objections to imposing credit ceilings on individual commercial banks and prefer to impose a single ceiling on central bank domestic credit. If the relationships involved in the estimation of the credit multiplier (i.e., the ratio between total bank domestic credit and central bank monetary liabilities) are stable, the imposition of a ceiling on the central bank domestic credit would effectively constrain bank credit, given the assumptions about net foreign assets. This would avoid involvement in the sensitive and difficult task of allocating credit among banks. Besides, the ceiling on the central bank domestic credit can be readily controlled.

The task is therefore to estimate the relationships between the monetary liabilities of the central bank and the principal components of the consolidated balance sheet of the commercial banks, taking into account the interest rates on both bank deposits and loans (if such interest rates play a role in the case investigated). This exercise may also give an indication of how a government deficit or surplus can be financed, that is, whether it can be financed through direct ad-

vances from the central bank, or from commercial banks, or both. It may be found that, for institutional or other reasons, the domestic credit of the central bank has to be higher than that derived from the credit multiplier. If this is so, a policy to reduce the size of the multiplier, such as the imposition of higher reserve requirements on banks or other similar policy actions, may be necessary.

The technical task of preparing a financial program is accomplished when the set of policy measures required to produce the desired targets has been determined.

The technique of financial programming described above has been presented in rather general terms. It should be noted that several iterations may be necessary in order to ensure the overall consistency of the financial program. In actual application of the program to specific cases, suitable modifications may have to be made in the light of the relevant economic circumstances and the availability of data. Furthermore, the order of steps in the financial programming exercise is not sacrosanct; in fact, in the formulation of a hypothetical financial program for Kenya, as presented in the exercise below, the order of steps differs from that outlined above.

This workshop, which contains an illustration and application of one possible technique of financial programming, provides the elements for preparing a hypothetical financial program for Kenya for the calendar year 1978. The first section discusses the medium-term policy objectives, the annual targets, and the performance criteria incorporated in the International Monetary Fund's extended facility arrangement for Kenya in fiscal years 1976-78. The second section reviews the actual performance of the Kenyan economy and discusses the implementation of government policies during 1975 and 1976. The third section describes and analyzes Kenya's economic situation in 1977. The last section includes the exercise below, which outlines a possible methodology to be utilized for the formulation of a hypothetical financial program for Kenya in 1978.

Exercise: A Suggested Procedure

It is assumed that the financial program for Kenya for the calendar year 1978 is being formulated in early January 1978. A suggested, though by no means exclusive, procedure for drawing up the financial program is outlined below.

1. *Indicate the principal objectives that are to be attained for the calendar year 1978. Among the objectives that should be considered are the growth rate in real GDP,² the rate of price increase, and the desirable balance of payments outturn (a minimum surplus or a maximum deficit). In fixing the GDP target for 1978, it should be determined whether the medium-term growth objective is realistic.*
2. *Given the preliminary selected objectives, forecast the components of the balance of payments and the overall balance of payments deficit or surplus for 1978. Is the forecast balance of payments outturn compatible with the*

assumed objectives? If not, there are several choices available. First, you can change the assumed objectives to make them more consistent with your forecast. Alternatively, you can change policies if you insist on the attainment of the objectives. In this case, you may consider varying capital flows either through renegotiation of foreign debts or through drawing on official loans, or you may consider putting more restrictive controls on the foreign borrowing of the commercial banks. You may also consider a change in the exchange rate or a change in monetary and fiscal policy. Note that these changes will also affect domestic prices and production.

3. *Having determined the target for the level of net foreign assets of the banking system and the policies involved, you can now proceed to construct the "desired" balance sheet for either the banking system or the monetary authorities of Kenya. For the balance sheet of the banking system as a whole, this procedure may be followed:*
 - a. *Estimate the demand for money and quasi-money on the basis of the target rate of growth of output and prices established in (2) above. The observed ratio of money to quasi-money over several periods may be useful for this projection.*
 - b. *Calculate the desired domestic credit for the banking system according to the monetary survey identity.*

For the balance sheet of the monetary authorities of Kenya, a possible procedure is the following:

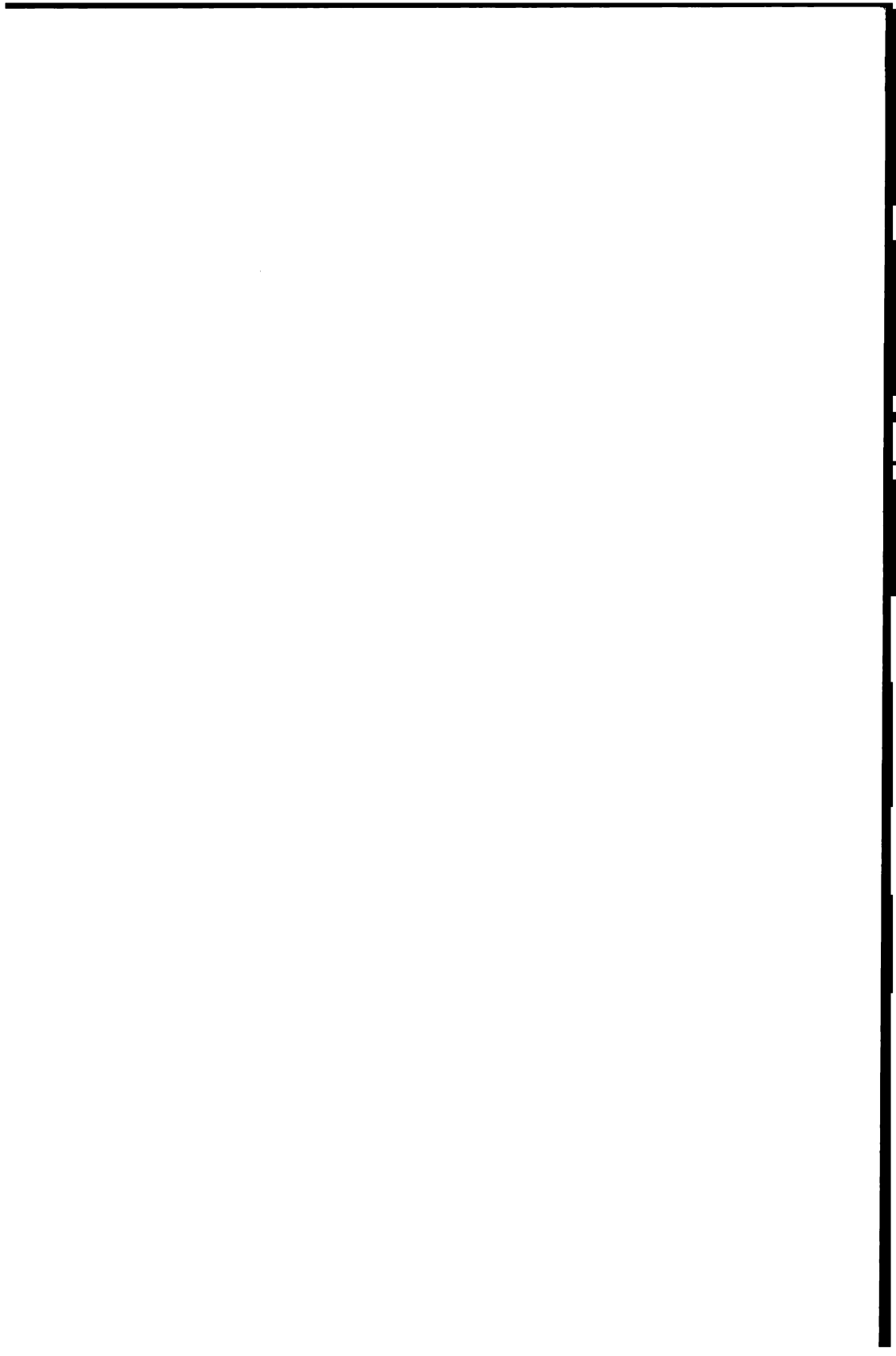
- a. *Fix the desired net international reserves of the monetary authorities.*
 - b. *Estimate the demand for money.*
 - c. *Project the monetary liabilities of the monetary authorities. The observed ratios of these liabilities to total money stock over several periods may be useful for this projection.*
 - d. *Project the net domestic assets of the monetary authorities that are equal to reserve money less the desired net international reserves of the monetary authorities, compatible with the estimated demand for money and the level of international reserves.*
4. *The credit projections so derived are in accordance with the target rate of growth in GDP and the target level of net international reserves. However, the projection for either domestic credit of the banking system or net domestic assets of the monetary authorities of Kenya may not be compatible with both the Kenyan Government's budgetary position and the private sector investment plan.³ Make a forecast for the principal items in the Government's budget (revenue as well as expenditure). The forecast of tax revenue has to be consistent with the target rate of growth in nominal*

income, flows of international trade that affect government receipts, and the proposed changes in tax laws, administration, or structure. Calculate the required borrowing (net) of the Government from the banking system for the program period. Seek to reconcile the projections for the balance of payments and the monetary aggregates with the projection for government revenue and expenditure and for investment of the private sector.

5. *Re-examine the entire program to see whether it is internally consistent and whether it is realistic and feasible. For this purpose, it may be useful to construct a summary of flow-of-funds accounts for the program period. Does the program imply substantial deviation from the past performance of the economy? If so, are the required changes in the available policy instruments feasible? If new instruments are proposed, to what extent can they be effectively used during the program period? Insofar as possible, state how your program can be implemented.*
6. *Determine the performance criteria for the program. Among possible criteria, the following are often utilized: (a) a limit on the domestic credit of the banking system, (b) a limit on the net domestic assets of the monetary authorities, (c) a limit on the net credit to the Government from the banking system, (d) a limit on new short-term and medium-term foreign borrowing by the public sector and the banking system, and (e) a limit for the decline in net foreign assets of the banking system. Are there other performance criteria that might produce the desired effect in the context of Kenya?*

Notes

1. Absorption is defined as consumption plus investment, both private and public.
2. Projections for sectoral growth and the demand components in the economy are often useful in order to arrive at a reasonable target for the rate of growth in GDP.
3. Sometimes the credit expansion so calculated must be adjusted several times. The reason is that the change in the rate of credit expansion would have an impact on the macroeconomic aggregates, including both GDP and net international reserves, which have been taken as given (targets) in the initial calculations of the credit projection.



Part IV

Flow-of-Funds Data Methods

Introduction to Part IV

For almost all countries, the estimation of flow-of-funds accounts appears to be a matter of data *assembly*. The basic data already exist; they simply have to be adjusted and fitted together to create the accounts. For a simple and rough system, there is truth in this view. It is why initial flow-of-funds estimates can be obtained with few resources—a few months' time of a single social accountant.

The first two readings in this Part on data methods take this point of view. In my own piece (reading 13) I first sketch the derivation of the accounts for a starting matrix of five sectors. Next comes the tightening of the system—shorter in my exposition but longer in the execution. This refers to the process of improving the technical consistency of the measurements in such dimensions as timing, and sector and transaction coverage. Most of this is a matter of reconciling differing data sources. Finally there is the question of how to expand the system to provide more sector and transaction detail. Right from the start, however, a completed matrix is available for use.

The second piece (reading 14) is an International Monetary Fund workshop on flow-of-funds assembly that uses data from Kenya. Fund members all provide data to the Fund for what may be called the “Fund Accounts”—balance of payments, central government finance, and banking statistics, using specifications set up by the Fund. In the workshop these accounts are combined with national income and product data to derive a 1976 matrix for Kenya that combines sector income and expenditure figures with financial balance sheet changes. Because actual data are being used, the workshop provides an especially useful introduction for practitioners. These first two readings give us an overall view of what is done; the next few readings delve in more detail into how it is done.

The heart of a flow-of-funds derivation is the worksheet system. This is a system of “spreadsheets” used to organize and control the assembling and estimating of the time series. One example of a complete set of worksheets is published in Copeland's *Moneyflows* book.¹ The only other published set I know of is in the Federal Reserve Board's recent *Guide to the Flow-of-Funds Accounts*,² from which reading 15 is taken. The methods are homely and unsophisticated—and not presented in statistics books or courses. Hence the following description.

Each worksheet has its own identification number, and each of its lines is numbered. Its many columns are used to array time periods. But one column, usually next to the stub at the left, is a source column and records the source of each time series. These sources are of three types: (1) a line from this system of worksheets identified by the worksheet number and line number that it comes from; (2) the result of an arithmetic operation performed on identified lines, as in: 104-6 plus 105-13; or (3) a clearly identified published (or file) source. By means of the source columns, any line in the worksheet system can be traced back to a published (or file) source. The possibility of data replication is thus assured.

The work of the derivation is all carried out on the worksheets: transcribing, reclassification and re-assembly, taking increments, and estimation of time series. A time series, for example, might be obtained from periodic benchmark figures using an "indicator" series and interpolated blowup ratios. The worksheet system is so designed as to maintain arithmetic checks—accounting balances and component-total relations—wherever possible. A sector's worksheets can be set up so that the data are processed through the worksheets toward a final sources and uses account worksheet. By such arrangements the experienced social accountant *designs* the worksheet system.

The system may well end with a discrepancy/discrepancy sheet. This will assemble all the sector discrepancies and all the transaction-type discrepancies (with "other claims and discrepancy, net" treated as a transaction type) to ensure that each set of discrepancies totals zero for each time period. This will check much of the worksheet arithmetic and also can help in tracking errors. The worksheet system is also used to keep the data current. Transcriptions for the next year or quarter are added as soon as the data can be obtained and these entries worked through the system to generate new flow-of-funds data.

The description above is presented as if the work is to be done by hand or on a personal computer. This method may well be best in situations where data sources and formats are in frequent change, requiring frequent changes in the worksheet set-up. Also, hand-done worksheets provide easy accessibility among staff, a necessity in a group effort. When the worksheet system settles down it can be transferred to a larger computer. Then the flow-of-funds data can be kept current by an input of the next period's raw data. A system for coding all the time series will at some point become convenient for computer use.³

Reading 15 on worksheet methods provides some detail and examples in these matters. The illustrative worksheet tables selected, F.100 and F.204, in Tables 15.1 and 15.2, permit the reader to trace the Federal Reserve Board's estimate for household sector checkable deposits and currency to its origins. This figure is an example of a residual estimate in the system. The Explanation column in these tables condenses some worksheet material, but its nature is clear. This set of tables in the *Guide* is an exercise of proper responsibility by the flow-of-funds statisticians—the responsibility to present in detail the sources and methods for the data they produce.

The next reading is related to the problem of estimating a separate corporate business sector—either for parastatal enterprises or private corporations. This may be the first time in the flow-of-funds estimating that a substantial new data compilation is required. What is needed is a combined balance sheet (plus a few combined income statement items) for a large sample of the corporate sector. The compilation might be done from company income tax returns, from the files of a registrar of companies, or from reports of companies listed on a stock exchange. Such a compilation is useful, of course, for a variety of purposes other than flow-of-funds analysis. The derivation of the flow-of-funds account from this compilation is outlined in reading 16, which assembles such a statement for the major state enterprises in Ghana for 1972–75.

If we go back to an earlier stage in the development of the U.S. accounts, prior to the integration of the flow-of-funds and national income and product accounts, we find the flow-of-funds data producers and users needing to relate flow-of-funds concepts to those in a variety of other data systems. This was done by means of so-called reconciliation or bridging tables. Such tables enable one to move from one statistical system to another. These tables had many uses: They could be used for estimating flow-of-funds series, they could be used in translating a projection or forecast from one system to another, and they were a great help in discrepancy sleuthing. A selection of such tables from an early Federal Reserve Board publication is presented as reading 17. A study of the classification scheme for conceptual differences and the examples to be found in these tables is very informative. Wherever harmonization is not complete among the basic data systems of a country, the construction of bridging tables should be given a very high priority.

We come now to a current frontier in the estimation process, the measurement of international capital flows. If all the countries of the world kept consistent balance of payments accounts, a capital flow out of one country would always be matched by an equal capital inflow to another, so the *net* capital flow for all countries as a whole would be zero. In the 1980s, as international capital flows expanded, this measured global capital account, instead of being near zero, became large indeed. It was evident that there were major discrepancies in reported international capital flows. In 1989 the International Monetary Fund set up a working party to study these measurements and make remedial proposals. Reading 18 is from the final report of this working party.

One key lesson we learn is that the data problems appeared when major changes in international capital flows occurred while data collection methods remained unchanged. The detailed studies and skillful use of international data sources by the working party enabled much of the new discrepancies to be identified. Undoubtedly, conceptual social accounting balances played a major role in this sleuthing effort.

Readings in Part IV of this book are not by any means intended as a detailed guide to the derivation of financial statistics. Nor is this necessary; the Interna-

tional Monetary Fund has undertaken this task. The preparation of a *Manual on Monetary and Financial Statistics* is well under way at the Fund. The new manual will complement the SNA 1993 as well as the Fund's manuals on the Balance of Payments and Government Finance Statistics. It will contain the necessary detailed treatment of concepts, definitions, classifications, and conventions for the guidance of statistical practitioners working in the monetary and financial area.

Notes

1. Morris A. Copeland, *A Study of Moneyflows in the United States* (New York: National Bureau of Economic Research, 1952), pp. A1-A235.

2. Board of Governors of the Federal Reserve System, *Guide to the Flow-of-Funds Accounts* (Washington, DC: Board of Governors of the Federal Reserve System, 1993), pp. 56-626.

3. See *ibid.*, p. 37.

JOHN C. DAWSON

How to Estimate a Simple Flow-of-Funds System

(1991)

The objective of this section is to derive a simplified system of flow-of-funds (FOF) accounts that is currently feasible for almost all countries and that can lead in steps to the 1968 SNA¹ system of sector capital finance accounts or to a complete flow-of-funds system. It is, in effect, a design for a series of intermediate systems leading toward full implementation; it thus embodies its own suggestions for statistical priorities. It is written with the needs of developing countries especially in mind.

Getting the Initial Estimates

The method of presentation will be to describe the statistical implementation of a simplified FOF matrix by using the sort of statistical base found in the developing countries in, let us say, the 1970s. This will enable an enumeration of the bare statistical necessities for such an undertaking. Then the successive stages of statistical elaboration of the matrix will be described in the order of movement toward a full system. For this exercise we shall assume that the International Monetary Fund's balance of payments, government finance, and money and banking statistical systems are not available to use as data sources.

Table 13.1 presents the format used for the earliest stage of FOF matrix.² It contains a very simple sectoring scheme of five sectors: central government, central bank, commercial banks, rest-of-world, and other domestic (a catch-all

Excerpted, with permission, from John C. Dawson, "The Flow-of-Funds Accounts, the United Nations System of National Accounts, and the Developing Countries," in Vincente Galbis, ed., *The I.M.F.'s Statistical Systems* (Washington, DC: International Monetary Fund, 1991), pp. 401–11.

sector that includes enterprises, households, and a variety of smaller sectors including provincial and local government and other financial institutions). The classification for types of financial claims is a simple but analytically effective scheme. In Table 13.1, financial institution loans and advances are divided between central bank advances and other loans and advances, which in this simple sectoring become entirely commercial bank loans and advances. Note that several of the key claims selected for enumeration are claims attributable to the *sectors* that have been selected, so that if data are available for these sectors they will in general be available for these claims. Note also that this layout of sector accounts does not suggest government as a whole or financial institutions as a whole. Each of these more aggregative sectors contains subsectors for which data are not likely to be available at this earliest stage.

As a primary matter, the time reference that is to be standard for all sectors must be considered. Local data sources may deal with the central government on a fiscal year basis, whereas the banking data and balance of payments are on calendar years. Which time reference is used will depend on the ease of conversion. If an insufficient amount of quarterly or semiannual data are available to permit conversion and, hence, uniformity where it does not exist, then FOF implementation should probably be deferred. Financial flows are simply too volatile for the average of two calendar years to be representative of a fiscal year, or vice versa.

A second primary requirement is the existence of balance of payments data on a local currency basis. Moving from dollar or SDR figures to a local currency basis with a single exchange ratio can give unsatisfactory results. However, the most critical data are those for the current account balance and the items above it. Because local currency figures here are necessary for the income and product accounts, it is likely that even for developing countries a local currency balance of payments will be available or can be estimated. If it is not possible to obtain it, however, the FOF effort should be deferred.

The question of how current the basic data are is a final preliminary. The data are likely to be reasonably current in the directly estimated sectors because they are all tied to areas of current public policy decision making. But at the start, one need not aim to assemble a very recent year. The compiler would be well advised to move back in time to a year in which definitive rather than preliminary or revised data are available. Once the system can be successfully produced with a lag of a few years, one can use the more recent, more preliminary, and more fragmentary sources to carry the system toward current data production.

One may now proceed to the matrix itself, referring to Table 13.1. The totals data at the right of the table for the first two lines—gross capital formation and gross saving—will come from the national income and product account (NIPA) data. It is on these first two lines that the FOF construction ties in with the income and outlay accounts that lie above the capital finance accounts in the SNA. The key breakdown of capital formation between central government and

Table 13.1

Financial Flow Matrix I

Item	Central Government		Central Bank		Commercial Banks		Other Domestic Sector		Rest of World		Discrepancy		Total	
	U	S	U	S	U	S	U	S	U	S	U	S	U	S
Gross capital formation	27				1		304						332	
Gross saving		-24		5		3		251		97				332
Net lending (+), borrowing (-)	-51		5		2		-53		97			-		
Currency and deposits				77	12	93	144					-14	156	156
Bills, bonds, and loans:														
Central government debt		159	92		14		16		54		17		176	176
Central government loans	109							109			-		109	109
Central bank advances			27			23		6			-2		27	27
Other loans and advances					80			80			-		80	80
Other domestic debt		1		4	10			38	33		-		43	43
Foreign assets	6		-27							-12	-9		-21	-21
Other claims and discrepancy, net		6		6		-2		-20		2	8			
Total sources, uses	142	142	92	92	117	117	464	464	87	87	0		902	902

Note: "U" indicates uses of funds; "S" indicates sources of funds; a dash (-) indicates that the entry is zero.

other sectors is usually available in the NIPA source. The saving breakdown is generally more troublesome. The NIPA source will have a rest-of-world saving figure that is (minus) the surplus of the nation on current account, but NIPA is unlikely to have central government saving. This figure may well have to be derived as an operating surplus from the central government data. Given the domestic saving breakdown between central government and other sectors, one has (by subtraction from gross capital formation) the surplus or deficit of each sector, shown in Table 13.1 as net lending or borrowing.³ This is the figure to be analyzed into the incurrence of liabilities (financial sources of funds in Table 13.1) and the acquisition of financial assets (financial uses in Table 13.1) in the lower section of the matrix.

Now consider the initial derivation of each of the directly estimated sector accounts from its basic sources. For the central government, two such sources are generally available: the data associated with the budget-making process and the data associated with the auditing process. Each will contain past actuals for income, outlay, and financing—the budget source often being more up-to-date but less detailed. The quality of either source may be much better than the other. It is better to stick to one source if possible, since each reflects a whole system of accounts and tables.

The worksheet task is to transcribe the balancing account and supporting detail so that the account can be rearranged and condensed to yield a first approximation to the Table 13.1 sector account. The focus will first be on deriving a nonfinancial surplus or deficit from the revenue and expenditure figures. The main difficulty is the removal of financial transactions from the expenditures and revenues.⁴ Expenditures are likely to contain new loans or equity advances (or both) made and also repayments of government debt principal; receipts will probably contain some types of debt issues and repayments to the government of principal on loans. These financial entries are to be assigned below the line to complete the estimates for the net increases in government debt and government loans. It is useful to keep the balance in the account during this process of netting, reclassification, and condensation, making use of a miscellaneous (or “other sources”) net item. Finally, if necessary, the nonfinancial surplus control figure from the government finance data can be combined with the capital formation figure from the income and product data to obtain a residual estimate for central government gross saving.

As this process proceeds, classification decisions will be made. If ways and means advances from the central bank can be identified in these data, they can be assigned either to the bank loans or government debt category according to local policy usage. For FOF purposes, where they are assigned is not critical; the key point is to make the same assignment in the central bank account.

In broad outline, the estimation of the rest-of-world account from the balance of payments data is a simple affair.⁵ The debits and credits are reversed to shift to a rest-of-world viewpoint, and the current account is netted down to a single

gross saving figure. In the transforming of the capital account, it is essential that the basic data separate asset items from liability items (not merely debits from credits) so that financial uses can be separated from sources. The capital flow to the official sector is an estimate of the rest-of-world's acquisition of government debt, and that to the private sectors is an estimate of its acquisition of other domestically issued debt. All the rest-of-world liabilities are assembled into the claim category of foreign assets. To the extent that these are held by the central bank or the commercial banks, they become foreign exchange; in general, other domestic sector holdings are small. It is sometimes analytically desirable to present the foreign exchange of the two banking sectors on a net basis, and that convention is followed here. In principle, then, the rest-of-world's foreign exchange entry is the sum of the net foreign exchange held by commercial banks and by the central bank. These entries are the bulk of the foreign assets line.

The flows for both the central bank and the commercial banks in Table 13.1 are derived as balance sheet increments. The basic process is again straightforward. Balance sheet transcriptions are taken from the basic banking statistics; they are reclassified into FOF format, and increments are taken. To ensure that the currency and deposits liabilities of the banking sectors reflect the entire quantity of money, a small accounting adjustment is sometimes made, transferring any monetary accounts of the central government into the central bank account.

Whenever financial flows are being estimated by balance sheet increments, as here, the question arises whether these increments reflect only the transactions in the instrument or also reflect book write-ups or write-downs.⁶ Conceptually, the revaluations should be removed so that the flow portrays only the transactions. Practically, the matter hinges on the size of the revaluation in relation to the flow and, indeed, on whether the data availability makes the removal possible. Fortunately, for developing countries, experience indicates that the problem is not serious in the banking sectors as far as the domestic assets and liabilities are concerned.⁷ It is most likely to arise in foreign assets and with respect to net foreign exchange. For example, it has become somewhat conventional for central bank balance sheets to revalue their monetary gold stocks for balance sheet purposes. Because the international transactions in gold are likely to be small, the flow will be overwhelmed in the balance sheet increment by a revaluation of the stock, and a removal adjustment will be essential.

With respect to commercial banks, the sector coverage will be governed by the basic aggregation in the banking statistics. It is very important for effective sector articulation that the data used be as of the actual year end and not, for example, as of the end of the last business week of the year. In the account for this sector, it is useful to accept for the time being the definition of bank loans that is found here (interbank loans eliminated). Further, the bank loan portfolio figures are taken as the statistical control total for the bank loans (other loans and advances) category. With the Table 13.1 matrix, the only institutional sector

breakdown of bank loans that is required is that between central government and other, and the usual balance sheet will provide it. But, to anticipate, a bank loan classification by institutional sector (loans to local governments, government enterprises, other financial institutions) will at a later stage be very useful.

Once preliminary sources and uses of funds accounts have been completed for the four sectors, the assembly of the other domestic sector in Table 13.1 is simply a matter of calculating the residuals to balance the cross totals. In this process, any items in the discrepancy columns not involving the other domestic sector should be taken as given. In fact, the discrepancy columns should be treated as if they comprise an institutional sector, with a residual estimate at the bottom to force the total net sources to zero.

The matrix at this stage is a fairly rough affair. It is essential now to examine and tighten the articulation of the sector accounts. This is best done by focusing "crosswise" on the transaction type accounts or the level version of these accounts, which may be called debt distribution tables. For example, suppose that the banking statistics offer a table that breaks down the government debt holdings by sector, or that such data are available for portions of the government debt such as treasury bills or government bonds. The assembly of such tables may well have involved adjusting the technical basis of the various sector records into uniformity and may thus enable the compiler to do so as well.⁸ Most important, this process should enable one to make progress on what are likely to be the main inconsistencies at this stage—the coverage of the types of transaction. Borderline transactions need to be treated in the same way by all sectors across the matrix. For example, if the treasury carries an overdraft, it must consistently be assigned either to deposits or to bank loans.

In the end, the compiler will have a matrix of substantial usefulness both as a way of conceptualizing important relationships and as a source of substantive analysis. If it is urged that a residually estimated "other domestic sector" is not a very firm basis for economic policy, then the reply must be that these estimates are inferred from data for the central government, the banking system, and the balance of payments that are routinely used as the basis for policy. One may as well see clearly what such data imply for the other domestic sector. Finally, as it is hoped this description has made clear, one has an instrument that is feasible and inexpensive to create—easily done by one social accountant in, perhaps, two months.

Tightening the System

One of the great advantages of the initial FOF implementation described above is its launching of a creative stage for the statistical system of a developing country. Broadly speaking, the condensed FOF matrix provides the incentive and points out the direction for several substantial improvements in financial statistics. The nature of these developments will now be indicated.

Table 13.1 might have very few entries in the discrepancy columns. If this is the case, it would not be because of the high quality of the estimates, but rather because of the necessity for residual estimates for the other domestic sector. In effect, many of the discrepancies will be transferred to and incorporated in the estimates for this sector. These discrepancies can be conceived of as arising from the existence of two differing estimates for one FOF matrix cell—estimates from two differing statistical sources. For example, figures for bank reserve deposits usually appear in the balance sheets of both the central bank and the commercial banks. If the figures differ and if, rather than selecting one as the basis for both bank reserve flow estimates, both flow estimates are retained—each in its respective sector—then the discrepancy will appear in the discrepancy column. It is very important in FOF work to make such identifications wherever possible and to have them appear in the discrepancy columns: if the discrepancies are large and involve key policy variables, they should be out in the open so they can be dealt with.

The estimates assembled so far have involved three (largely) separate data sources. Thus it is likely that this sort of discrepancy will already have been encountered and that the differences will turn out to be recalcitrant (i.e., the estimates cannot be reconciled by modest efforts). Five possibilities for such discrepancies might well be significant: (1) central government borrowing from abroad (central government versus balance of payments data), (2) central government cash balance (central government versus banking data), (3) change in foreign exchange reserves (balance of payments versus banking data), (4) central government gross saving (central government versus national income and product data), and (5) government debt issue (central government data versus data compiled in the central bank).

To gain a sense of why the exploration of these discrepancies has creative possibilities, visualize the typical statistical "system" of many developing countries. The data sources considered here will to some extent correspond to different data-producing organizations. Perhaps there will be a bureau of statistics producing the national income and product data. Probably the central bank will supervise banking data and the assembly of the balance of payments data, and the treasury (or auditor general) will generate the central government data. In a developing country these organizations may well generate their respective data with a minimum of technical communication with respect to statistical methods or detailed breakdowns. Coordination and cooperation among governmental agencies may not yet have developed. The point is that a detailed reconciliation effort of the sort required to reduce the FOF discrepancies requires the kind of technical consultation that can become an important force for coordination.

Organizationally, FOF analysis also needs a home. Some single agency needs to be responsible for its generation; an interagency committee will not have sufficient authority to be successful. Probably the central bank will have closest

access to the necessary data sources and, eventually, to analytical users. The latter is desirable because users will press for continuous, current generation of the data and for needed types of further detail.

Expanding the System

The strategy for expanding the condensed matrix, either toward the 1968 SNA's sector capital finance accounts scheme or toward a still fuller FOF system, is the same simple one: to break down the "other domestic sector"—that is, to proceed to make direct estimates for subsector accounts and in turn break each subsector account out of the other domestic sector, each time leaving a smaller and more homogeneous, residually estimated other domestic sector. This procedure implies that added sector detail is more useful analytically than transaction detail at this point. This will continue to be true until the main parts of the enterprise sector can be separately shown.

If a country has a substantial system of economic planning, an appropriate statistical direction would be toward a public sector account (i.e., to estimate accounts for provincial and local government and for government enterprises). Provincial and local governments themselves (or at least the large ones) should be able to provide income, outlay, and financing data in budget documents. If necessary, earlier actuals can be carried forward on the basis of budget figures. Or it may be possible to assemble a synthetic account from data from the planning ministry if the plan covers provincial and local government capital formation and financing. In addition, perhaps the banking data can provide figures for bank loans to this sector. As this sector is entered into the matrix, the components of provincial and local government debt issues will be defined and allocated. There may be security issues (perhaps assigned into other domestic debt), borrowing from the central government (into central government loans), bank loan borrowing (into other loans and advances), and, perhaps, borrowing from abroad (into other domestic debt).

Next, nonfinancial government enterprises will be considered. Suppose that the central government or planning data do not provide the detail needed to assemble a capital finance account, and so a new compilation must be made. The initial task will be to transcribe the balance sheet and appropriate income statement items for each enterprise from published annual reports or reports filed with regulatory agencies or with the registrar of companies.⁹ If there are many such enterprises, a sample of the largest may be advisable; often, a surprisingly small number of government enterprises can account for 80 percent or more of the sector. Given the transcriptions, a standard balance sheet format must be designed—one as close as possible to the FOF classification but still one into which all the enterprise statements can be transformed in order to permit compilation. If the accounts have been audited by auditing companies, the balance sheet formats will already be quite similar.

At this point in the derivation of the FOF account from these data, rough estimates of some items will no doubt be necessary. Finally, either the sample or blown-up estimates for the universe may be used for the FOF sector.

Another subsector that will be quite easy for most developing countries to assemble is that of the nonbank financial institutions. In the early development of a financial system, there are usually few such institutions. The procedure is as outlined above for government enterprises.

These expansions of the condensed matrix are illustrated in Table 13.2. The sectors in the matrix at this stage are similar to the full FOF scheme, except that private corporate enterprises are not yet separated out of the other domestic sector.¹⁰ For many developing countries, this will be as far as the FOF implementation can be taken, given a modest commitment of resources. An assembly of basic financial data for private corporations is not likely to exist, and such a compilation may be beyond the capability of a small statistical shop. Thus the final stage in this case will await the compilation from tax files, official financial reports, or company reports of aggregate balance sheets and income statements for a significant sample of private companies. Still, these data are important for many uses, and the task of compilation will not be an enormous one.¹¹

Throughout this description of breaking-down the other domestic sector, little attention has been paid to the expansion of detail for transaction types. But the coverage of financial transactions has been slowly expanding. Each new directly estimated subsector picks up new claims in its liabilities or its portfolio that were not previously in the matrix because, in effect, they were washed out when the subsector was a consolidated part of the other domestic sector. That sector is *de facto* a consolidated one because of its residual derivation. Thus, perhaps the greatest increase in the system's coverage of private claims will occur when private corporations can be finally separated from households.

A final commentary relating SNA 1993 to the implementation process as it has been described here should be made. As the developing countries set out to disaggregate the national capital finance account into sector capital finance accounts, their data sources do not permit them first to estimate such an account for general government as a whole and then break it down further into central, provincial, and local government, or to estimate such an account for all financial institutions and then break this down into the central bank, commercial banks, and other financial institutions. As we have seen, the process is rather the reverse. Accounts are first estimated for the key subsectors—those of policy importance—and these are later added to in order to assemble government or financial institutions or nonfinancial enterprises as a whole. This suggests a sequence of standard systems—a developmental sequence that would guide countries toward the implementation of a full FOF system.

Table 13.2

Financial Flow Matrix II

Item	Central Government		Provincial Government		Government Enterprises		Central Bank		Commercial Banks		Non-bank Financial Institutions		Other Domestic Sector		Rest of World		Discrepancy		Total	
	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U	S
Gross capital formation	27		33		120				1				151						332	
Gross saving		-24		-14		21		5		3		1	243		97				332	
Net lending (+), borrowing (-)	-51		-47		-99		5		2		1		92		97				-	
Currency and deposits					6		77		12		1		138						156	
Bills, bonds, and loans:																			-14	
Central government debt									14		3		13		54				17	
Central government loans	159		19		88		92											1	109	
Central bank advances	109						27		23		6							-2	27	
Other loans and advances					9				80		8		66					-	88	
Other domestic debt		1	7	1	-2		4		10		2		45		33			-	52	
Foreign assets	6						-27								-12			-9	-21	
Other claims and discrepancies, net		6			10		6				3		-52		2			7		0
Total sources, uses	142	142	39	39	126	126	92	92	117	117	14	14	302	302	87	87		0	919	919

Note: See Table 1.

Notes

1. United Nations, *A System of National Accounts*, Studies in Methods, series F, no. 2, rev. 3 (New York: United Nations, 1968).
2. Use of this format is recommended not only for countries with the least-developed statistical systems but also as the starting FOF format for countries at a more advanced statistical stage.
3. As a first approximation, these lines for the banking sectors may be assumed to be zero.
4. Other technical problems may involve the removal of internal transaction entries and the adjustment of accrual items.
5. It is assumed here that the figures for the balance of payments current account surplus from the balance of payments data and the rest-of-world saving from NIPA data are equal, apart from sign reversal.
6. The issue here is not affected by whether the gain or loss is realized, but rather by whether balance-sheet valuations reflect the gain or loss, realized or not. The sale of a financial asset that realizes and records a gain should be viewed as a book revaluation followed by a transaction.
7. It is assumed here that the commercial banks' long-term bond holdings are small.
8. The major origins of discrepancies may be listed as differences in (1) sector coverage, (2) transaction classification, (3) basis of valuation, (4) timing of recording, and (5) degree of netting or of consolidation.
9. Gross saving can be approximated by the sum of retained profit plus the depreciation charge from the income statement. Gross capital formation can be approximated by the increment in gross fixed assets. For details see reading 16.
10. The other domestic sector may still include local governments and the government enterprises and nonbank financial institutions lying outside their respective samples.
11. Far off on the horizon, the question might arise whether to split a noncorporate business sector away from a remaining household sector, as is done in some full FOF systems. Even if data are available, such a split would be highly arbitrary in the institutional context of most countries. It would seem wise to leave noncorporate business sector within households, except for the quasi-corporate portion.

INTERNATIONAL MONETARY FUND INSTITUTE

**Estimates from the IMF Accounts:
Kenya***(1981)*

The purpose of this workshop is to show how income and financial transactions undertaken in a modern economy, divided into economic sectors according to type of activity or pattern of behavior, can be organized and summarized conveniently in a set of interrelated accounts. The usefulness of setting up a flow-of-funds system lies in the fact that it describes the financing of the various sectors of the economy and the categories of market instruments used in financial transactions. Such a system brings out explicitly the important macroeconomic accounting identities that aid in the formulation of behavioral hypotheses, and it helps in the design and control of development plans, as well as in the design and checking of consistency of short-run financial programs.

**Relations with the Monetary Survey, Government Finance
Statistics, and Balance of Payments Statistics**

Many countries do not have a comprehensive system of flow-of-funds accounts, in part because of a lack of requisite information. In most cases, data on private sector saving, investment, and financing are so fragmented that the private sector columns in the flow of funds summary are difficult to fill. Nevertheless, a part of this information gap can be closed by making use of the monetary survey, government finance statistics, and balance of payments statistics, which are generally available. These data are normally compiled with considerably shorter delays and at more frequent intervals than national income data. The crucial problem is that of achieving an adequate and consistent allocation of the data by

Excerpted, with permission, from International Monetary Fund Institute, "Workshop 4: Flow-of-Funds," in *Financial Policy Workshops: The Case of Kenya*, ch. 6 (Washington, DC: International Monetary Fund, 1981), pp. 137–39, 142–50, 305.

sector. In order to show the intersectoral relationships as in a flow-of-funds system, changes in assets and liabilities in these accounting sources must be allocated by sector according to consistent criteria, so that flows originating in one sector and directed to another (as shown in the first sector's statement) are consistent with flows recorded in the second sector (as directed to it from the first).

The monetary survey is a consolidated statement of the banking system, i.e., the monetary authorities and deposit money banks. It does not include other financial intermediaries. In this classification, the nonbank financial intermediaries are lumped together with the private sector. Similarly, when government finance statistics are available only for the central government, municipal and local governments and public enterprises are classified with the private sector. Furthermore, in terms of data classification, there are differences between national income accounts, on the one hand, and balance of payments statistics and government finance statistics, on the other.

The sectoral position for the foreign sector ($X - M$), which represents net lending to the rest of the world in the national income accounts, is not identical to the net balance on current account in the balance of payments.¹ Among other differences, net lending in the national income accounts classification (1) includes the net purchases of nonfinancial intangible assets such as leases, (2) excludes earnings reinvested in direct investment enterprises, and (3) excludes shipments of commodities between a parent enterprise and its subsidiary that do not involve a change of ownership. In the balance of payments, (1) net purchases of nonfinancial intangible assets are included in the capital account, (2) the direct investors' share of reinvested earnings is shown as investment income and is balanced by entries in the capital account, and (3) shipments of commodities between a parent enterprise and its subsidiary without a change of ownership are included with merchandise.

Expenditures and revenues of the government in the national income accounts are not identical to those reported in the government finance statistics. A significant difference is that national income accounts adhere to an *accrual basis* of recording, reflecting production and delivery, whereas transactions in the government finance statistics are recorded on a *payment basis*. Other major differences are: (1) resources representing past or future transactions, such as consumption of fixed capital and imputed contributions to unfunded pension schemes, are excluded from the government finance statistics while they are included in the national income accounts; (2) government lending operations undertaken for public policy purposes are classified with expenditure in the government finance statistics rather than with financing (as in national accounts); and (3) banking and monetary authorities' functions performed by government are separated from government in the government finance statistics, while they are grouped with government in the national accounts.²

When consistent allocation by sector is made and data are classified appropri-

ately, the monetary survey, the central government budgetary operations, and the balance of payments summary can be used in the summary of flow-of-funds accounts.

National Accounts and Flow-of-Funds of Kenya, 1976

Basic income and financial data for Kenya for the years 1975–76 are provided in Tables 14.1 to 14.7. Several points should be mentioned before the flow-of-funds accounts are compiled. First, since no separate data are available for the household and corporate sectors, the transactions of these two sectors vis-à-vis the other sectors of the economy are consolidated into one sector, i.e., the private sector. Second, insufficient information is available regarding the income and financial transactions of the local governments, other official entities, and the nonbank financial institutions. For this reason and from a practical policymaking point of view, the government sector includes only Budgetary Central Government, while the banking sector comprises the Central Bank and the commercial banks.

Table 14.8 summarizes the relevant data on income-expenditure and financial transactions from the previous tables for the compilation of flow-of-funds accounts for Kenya for 1976. Some adjustments have been made for the convenience of the compilation. The resulting summary matrix of income and flow-of-funds accounts for 1976 is presented in Table 14.9.

Table 14.1

Kenya: Selected National Accounts Data, 1975–76 (in millions of Kenya shillings)

Item	1975	1976
Resources		
GDP at factor cost in current prices	20,560	25,257
Indirect taxes and subsidies	2,783	3,325
GDP at market prices	23,343	28,581
Imports of goods and services	8,358	9,436
Total	31,701	38,017
Use of resources		
Private fixed investment	2,824	3,390
Public fixed investment	2,026	2,450
Change in stocks	—275	133
Gross investment	4,576	5,973
Private consumption	15,731	17,542
Public consumption	4,256	4,943
Total consumption	19,987	22,485
Gross domestic expenditure	24,563	28,457
Exports of goods and services	7,138	9,560
Total	31,701	38,017
National income		
GDP at factor cost	20,560	25,257
Factor incomes received from abroad	428	352
Factor incomes paid abroad	1,256	1,444
GNP at factor cost	19,732	24,165
Indirect taxes and subsidies	2,783	3,325
GNP at market prices	22,515	27,490

Source: Kenya, *Economic Survey*, 1978.

Table 14.2

Kenya: Summary of Central Government Budgetary Operations, Fiscal Years 1976 and 1977 (in millions of Kenya shilling; year ending June 30)

	Item	1976	1977
1	Current revenue	5,123	6,149
1.1	Tax	4,571	5,297
1.2	Nontax	552	852
2	Capital revenue	—	—
3	Total revenue (1 + 2)	5,123	6,149
4	Grants	201	234
4.1	Current	61	24
4.2	Capital	140	210
5	Total revenue and grants (3 + 4)	5,325	6,383
6	Current expenditure	4,904	5,580
7	Capital expenditure	1,259	1,660
8	Total expenditure (6 + 7)	6,164	7,240
9	Lending minus repayments	870	470
10	Expenditure and lending minus repayments (8 + 9)	7,034	7,710
11	Current account surplus or saving (without grants) (1 — 6)	219	569
12	Gross fixed capital formation	1,059	1,388
13	Gross capital formation	1,059	1,388
14	Overall deficit/surplus (5 — 10)	-1,709	-1,327
15	Financing (= 14)	1,709	1,327
15.1	Abroad	639	464
15.2	Domestic	1,070	863
15.2.1	Nonbank	670	868
15.2.2	Deposit money banks	350	684
15.2.3	Central Bank	50	-689

Sources: International Monetary Fund, *Government Finance Statistics Yearbook*, Vol. 2 (Washington, 1978), and *International Financial Statistics*, various issues; Central Bank of Kenya, *Annual Report for the Financial Year Ended 30th June, 1977*.

Table 14.3

Kenya: Expenditure and Lending Minus Repayments by Economic Type for Budgetary Central Government, Fiscal Years 1976 and 1977 (in millions of Kenya shillings; year ending June 30)

	Item	1976	1977
I	Total expenditure and lending minus repayments (II + V)	7,034	7,710
II	Total expenditure (III + IV)	6,164	7,240
III	Current expenditure	4,904	5,580
1	Expenditure on goods and services	2,230	2,965
1.1	Wages and salaries	1,295	1,379
1.2-3	Employers' contributions	18	22
1.4	Other purchases of goods and services	918	1,564
2	Interest payments	391	479
3	Subsidies and other current transfers	2,283	2,136
3.3	Transfers to other levels of National Government	1,258	1,365
3.6	Transfers abroad	20	26
IV	Capital expenditure	1,259	1,660
4	Acquisition of fixed capital assets	1,059	1,388
6	Purchases of land and intangible assets	174	272
7	Capital transfers	26	—
7.1	Domestic	26	—
7.1.1	To other levels of National Government	26	—
V	Total lending minus repayments	870	470
8	Domestic	870	470
8.1	To other levels of Government	434	161

Sources: International Monetary Fund, *Government Finance Statistics Yearbook*, Vol. 2 (Washington, 1978); Kenya, *Appropriation Accounts, Other Public Accounts and the Accounts of the Funds for the Year 1975/76 and 1976/77*.

Table 14.4

Kenya: Monetary Survey, December 1974-June 1977 (in millions of Kenya shillings)

Item	1974		1975		1976		1977	
	December	June	December	June	December	June	December	June
Net foreign assets								
Central Bank ¹	969	854	581	1,189	1,459	3,776		
Government ²	1,061	933	681	1,192	1,449	3,717		
Commercial banks	4	—	8	9	16	13		
	-96	-79	-108	-12	-6	46		
Domestic credit								
Government (net)	4,966	5,297	6,414	6,563	7,475	7,798		
Claims	930	1,100	1,767	1,500	1,898	1,495		
Deposits	1,036	1,183	1,789	2,279	2,043	2,787		
Nongovernment	106	83	22	779	145	1,292		
Official entities	4,036	4,197	4,647	5,063	5,577	6,303		
Private sector ³	223	221	303	250	215	205		
Other items (net)	3,813	3,976	4,344	4,813	5,362	6,098		
	-18	-59	180	321	479	622		
Money and quasi-money								
Money	5,819	6,077	6,814	7,432	8,454	10,952		
Currency outside banks	4,016	4,052	4,540	4,966	5,674	7,496		
Demand deposits ⁴	1,086	1,022	1,234	1,194	1,625	1,765		
Quasi-money	2,930	3,030	3,306	3,772	4,049	5,731		
	1,803	2,025	2,274	2,466	2,780	3,456		
SDR allocations	134	134	— ⁵	—	—	—		

Sources: Central Bank of Kenya, *Annual Report for the Financial Year Ended 30th June, 1977*; International Monetary Fund, *International Financial Statistics*, July 1978.

¹ Foreign liabilities include use of Fund credit.

² Foreign exchange holdings.

³ Includes Cereals and Sugar Finance Corporation and Agricultural Finance Corporation.

⁴ Adjusted for 'uncleared effects.'

⁵ The domestic counterpart of Kenya's SDR allocation was transferred in September 1975 to treasury deposits with the Central Bank of Kenya.

Table 14.5

Kenya: Summary Accounts of the Monetary Authorities, December 1974-June 1977 (in millions of Kenya shillings)

Item	1974		1975		1976		1977	
	December	June	June	December	June	December	June	
Net foreign assets								
Foreign assets	1,065	933	1,201	689	1,465	1,465	3,730	
Foreign exchange ¹	1,354	1,390	1,867	1,439	2,309	2,309	4,477	
SDRs	1,338	1,340	1,862	1,403	2,282	2,282	4,432	
Reserve position in the Fund	16	40	5	36	27	27	45	
Foreign liabilities ²	—	—	—	—	—	—	—	
Domestic credit	289	447	666	750	844	844	747	
Government (net)	726	872	678	1,205	787	787	—53	
Claims	490	586	636	1,171	778	778	—53	
Advances	528	575	1,285	1,112	851	851	1,100	
Treasury bills	200	339	288	543	200	200	200	
Government securities	148	87	164	284	20	20	—	
SDR allocations used by Government	177	149	709	150	497	497	741	
Trust Fund loans	—	—	134	134	134	134	134	
Deposits	36	—11	659	—59	73	73	1,153	
Official entities	—	—	—	—	—	—	—	
Commercial banks	236	286	42	34	9	9	—	
Other items (net) ³	—132	138	145	281	251	251	287	
Reserve money	1,789	1,533	1,734	1,613	2,001	2,001	3,390	
Currency outside banks	1,086	1,022	1,194	1,234	1,625	1,625	1,765	
Currency in commercial banks	253	161	189	174	205	205	217	
Banks' deposits	361	313	311	131	133	133	1,268	
Official entities' deposits	69	37	40	74	38	38	139	
SDR allocations	134	134	—	— ⁴	—	—	—	

Sources: Central Bank of Kenya. Annual Report for the Financial Year Ended 30th June, 1977; International Monetary Fund. International Financial

Sources: Central Bank of Kenya, Annual Report for the Financial Year Ended 30th June, 1977; International Monetary Fund, International Financial Statistics, July 1978.

¹ Includes balances with banks abroad and foreign securities.

² Includes use of Fund credit.

³ Includes revaluation account, unclassified effects, and other unclassified assets and liabilities.

⁴ The domestic counterpart of Kenya's SDR allocation was transferred in September 1975 to treasury deposits with the Central Bank of Kenya.

Table 14.6

Kenya: Summary Accounts of the Commercial Banks, December 1974-June 1977 (in millions of Kenya shillings)

Item	1974		1975		1976		1977	
	December	June	December	June	December	June	December	June
Net foreign assets	-96	-79	-108	-12	-6	46		
Foreign assets	304	268	372	352	407	400		
Foreign liabilities	400	347	480	364	413	354		
Reserves	514	452	298	475	313	1,458		
Currency	253	161	174	189	205	217		
Deposits with Central Bank	261	291	124	285	108	1,240		
Domestic credit	4,476	4,711	5,243	5,927	6,897	7,851		
Government (net)	440	514	596	864	1,120	1,548		
Claims	510	608	677	984	1,192	1,687		
Advances	—	6	4	3	17	3		
Treasury bills	326	424	498	815	1,015	1,499		
Government securities	184	177	174	166	159	185		
Deposits	70	94	81	120	72	139		
Nongovernment	4,036	4,197	4,647	5,063	5,577	6,303		
Official entities	223	221	303	250	215	205		
Private sector	3,813	3,976	4,344	4,813	5,362	6,098		
Other items (net)	-44	-33	-109	12	145	135		
Liabilities to Central Bank	254	29	19	14	—	—		
Money and quasi-money	4,684	5,088	5,523	6,364	6,859	9,220		
Demand deposits	2,881	3,063	3,249	3,898	4,079	5,764		
Time and savings deposits	1,803	2,025	2,274	2,466	2,780	3,456		

Sources: Central Bank of Kenya, Annual Report for the Financial Year Ended 30th June, 1977; International Monetary Fund, International Financial Statistics, July 1978.

Table 14.7

Kenya: Balance of Payments Summary, 1976 (in millions of Kenya shillings)

Item	1976		Net Source
	Source	Use	
Current account	10,552	11,250	-698
Trade balance	6,224	8,158	-1,934
Imports, c.i.f.		8,158	-8,158
Exports, f.o.b.	6,224		6,224
Services	3,688	2,722	966
Freight and insurance	550	92	458
Other transportation	1,516	558	958
Foreign travel	858	260	598
International investment income	310	1,262	-952
Government transactions, n.e.s.	170	232	-62
Other services	284	318	-34
Transfers	640	370	270
Private	144	186	-42
Government	496	184	312
Capital account	1,677	237	1,440
Private long-term	512	50	462
Government long-term	702	-8	710
Government corporations long-term	188	86	102
Short-term	275	109	166
Government	—	12	-12
Government corporations	6	8	-2
Commercial banks	-35	67	-102
Private	304	22	282
Errors and omissions	—	—	34
Overall balance	—	—	776
Financing (increase in assets)	158	934	-776
Gross official reserves	—	870	-870
Use of Fund credit	158	—	158
Other liabilities ¹	—	64	-64

Sources: For the current account and the capital account (except commercial banks), the data are taken from Kenya, *Economic Survey*, 1978. The data for commercial banks and financing are taken from International Monetary Fund, *International Financial Statistics*, July 1978, in order to ensure consistency with the monetary accounts for purposes of financial programming (see Workshop 9: Financial Programming). The adjustment for the resulting discrepancy is contained in the residual item, Errors and omissions.

Note: n.e.s. = not elsewhere specified.

¹ Includes foreign banks' deposits with the Central Bank of Kenya and International Monetary Fund deposits.

Table 14.8

Kenya: Income-Expenditure and Financial Transactions, 1976 (in millions of Kenya shillings; at current prices)

Income-Expenditure Transactions		
Private sector	Amount	Sources¹
Imports of goods and nonfactor services	9,436	(8 and 14)
Payments (abroad) for factor services	1,444	(14)
Tax payments	4,934	(9)
Other payments to Government	702	(9)
Transfer payments abroad	347	(10 and 14)
Receipts from the sale of goods and services to Government	4,257	(10)
Exports of goods and nonfactor services	9,580	(8 and 14)
Transfer receipts		
From the Government	2,187	(10)
From abroad	422	(9 and 14)
Receipts from factor services (abroad)	352	(14)
Other income	4,749	(8 and 9)
Intrasector investment (including variation in stocks)	4,749	(8 and 9)
Government sector		
Consumption of goods and services	1,241	(10)
Payments for wages and salaries	1,792	(10)
Government investment	1,224	(9 and 10)
Transfer payments		
To private sector	2,187	(10)
Abroad	23	(10)
Tax revenue	4,934	(9)
Transfer receipts from abroad	218	(9)
Other income	702	(9)
Foreign sector		
Payments for goods and nonfactor services (exports of the domestic economy)	9,580	(8 and 14)
Transfer payments	640	(14)
Payments for factor services	352	(14)
Receipts from the sale of goods and services (imports of the domestic economy)	9,436	(8 and 14)
Transfer receipts	370	(14)
Receipts from factor services	1,444	(14)

Table 14.8 (continued)

Financial Transactions¹		
Banking sector		
Credit to private sector	930	(11)
Credit to government sector	254	(11)
Foreign assets	905	(12 and 13)
Currency in circulation (outside banks)	391	(11)
Treasury deposits with the banking sector	123	(11)
Demand deposits of the private sector	743	(11)
Time and savings deposits of the private sector	506	(11)
Other liabilities to private sector	299	(11)
Foreign liabilities	27	(12 and 13)
Other sectors		
Private sector's holdings of government securities		
increased by	600	(9, 11, 14)
Outstanding external debt of Government increased by	552	(9)
Direct foreign investment in the private sector increased by	1,024	(9 and 14)
Government loans to the private sector increased by	670	(9)

1. Sources 8 through 14 refer to Table 14.1 to 14.7, respectively.

² These data represent changes in assets and liabilities of the private, government, and foreign sectors during 1976.

Table 14.9

Kenya: Summary of Income and Flow-of-Funds Accounts, 1976 (in millions of Kenya shillings)

Item	Sector PS		Sector GS		Sector B		Sector FS		Total	
	Source	Use	Source	Use	Source	Use	Source	Use	Source	Use
I. Incomes and Expenditures										
1. Receipts										
Exports	9,560						9,436		18,996	
Transfers	2,609		218				370		3,197	
Taxes			4,934						4,934	
Other income	9,358		702				1,444		11,504	
2. Current expenditure										
Consumption				1,241						1,241
Imports		9,436						9,560		18,996
Transfers		347		2,210				640		3,197
Taxes		4,934								4,934
Other		2,146		1,792				352		4,290
Current account balance		4,664		611			698		5,973	
3. Saving (current account balance)	4,664									5,973
4. Investment expenditure		4,749		1,224						698
5. Overall position	85		613				698		698	698
II. Changes in Financial Balance Sheet										
1. Liabilities or claims										
to or on B	930	1,939	254	123			905	27		
to or on FS			552		27	905				
to or on PS	1,024		600	670	1,939	930		1,024		
to or on GS	670	600			123	254		552		
2. Net financing		85		613			698			

Notes

1. International Monetary Fund, *Balance of Payments Manual*, 4th ed. (Washington, DC: International Monetary Fund, 1977).
2. International Monetary Fund, *A Manual on Government Finance Statistics: Draft* (Washington, DC: International Monetary Fund, 1974).

**BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM****Worksheet Methods***(1993)*

This section of the guide describes characteristics of the data in the flow-of-funds accounts and discusses procedures used for seasonal adjustment and estimation of the data.

Time Series

The data in the accounts are maintained as economic time series, that is, sets of observations of economic variables collected at regular time intervals, with one observation for each period. The series begin in 1945. Quarterly data for the accounts are available from the first quarter of 1952; for 1945 through 1951, only annual data are available. When a time series is created for a new financial instrument or a new sector, values for earlier periods are assumed to be zero, and when a financial instrument no longer exists (e.g., deposits in the Postal Savings System, which was discontinued in 1985), the item is carried at zero from then on to facilitate compilation of the accounts.

Flows and Levels

The flow-of-funds accounts are published in both flow and levels versions; most flow tables have a corresponding levels table. The time reference for a flow variable is a period of time. Personal income—the amount individuals earn during a particular period of time, such as a week, month, or year—is a flow

Excerpted from Board of Governors of the Federal Reserve System, *Guide to the Flow-of-Funds Accounts* (Washington, DC: Board of Governors of the Federal Reserve System, 1993), pp. 27–31, 35, 120–27, 432–41.

variable, as are the net acquisition of government securities and borrowing from banks.

A level, also referred to as a stock variable, a position, or an outstanding, shows a value at a particular point in time. The balance in an individual's checking account at the end of a particular day is a level. Holdings of equities by households at the end of a quarter and commercial mortgage debt outstanding at commercial banks at the end of a year are other examples of levels.

The tables in this guide show the flows reported in the accounts for 1991. Some series, such as personal income or saving, exist only in flow form, whereas other series exist as both flows and levels. In many cases, data collected from reports or other sources for use in the accounts are in levels form; staff members of the Flow-of-Funds Section calculate the flow from these series, taking account of changes in value or series breaks where appropriate.

Series Breaks

Data for many flow series in the flow-of-funds accounts are found by calculating changes in levels between two points in time. In some instances, however, the change in the level does not equal the flow. One reason is that some series are shown at market value rather than at book value (i.e., historical cost). For series shown at book value, the flow ordinarily equals the change in the level; for series shown at market value, the change in the level between two periods is not equal to the flow. For example, corporate equities that are held as assets are valued in the accounts on a market-value basis, and the level for any period differs from that for the previous period by the flow, or net issuance, plus the change in market value—that is, the capital gain or loss.

A second reason the change in a level from one period to the next may not equal the flow is that a discontinuity has occurred in the levels series. A discontinuity arises when the group of institutions that constitute a universe changes, when institutions change the reports they use, or when a series is restated at another basis of valuation or its definition is changed; a discontinuity may also temporarily appear in the accounts when revised data for only recent time periods are incorporated, with incorporation of revised data for earlier periods postponed until the annual revision of the accounts.

Some flow-of-funds series, such as the series for holdings of corporate equities, have series breaks for virtually every period, but most other series rarely have breaks. A series that is a sum of several others or that is calculated as a residual will have series breaks for the periods during which any of its component series have them.

Periods of Coverage

The levels that appear in the flow-of-funds accounts are the values outstanding for the series on the last day of the period, and the flows are the changes from the

last day of one period to the last day of the next period. In this respect the data in the accounts differ from those that appear in a number of other Federal Reserve publications, which show data as average values during the period.

The quarterly flow-of-funds publications cover the three-month periods ending in March, June, September, and December, as do NIPA figures. Tables of annual values outstanding give figures as of the last day of the year, which is the same as the fourth-quarter level. Some flow-of-funds publications show quarterly data on an unadjusted, or not seasonally adjusted, basis; annual flows of unadjusted data—that is, the totals of the flows for all four quarters of the year—are the same as the average of the flows for the four quarters of data that are shown at seasonally adjusted annual rates.

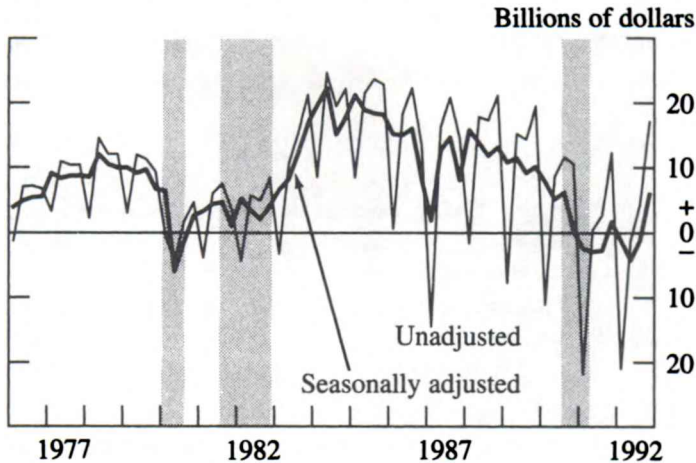
Revisions

Recent data—usually only data for the most recent two years—are revised with each release of the Z.1 statistical release. In addition, a benchmark revision is made each year, to incorporate updated values for periods more than two years earlier and to make structural changes resulting from new estimation procedures or financial market changes. The annual benchmarking usually coincides with preparation of the second-quarter Z.1 statistical release in September. At the time of the benchmarking, data may, in theory, be revised from 1945 onward; in practice, however, most changes are necessary for only fairly recent periods. A major determinant of the timing of the annual benchmarking of the flow-of-funds accounts is publication of the annual revision of the NIPA, usually in July. NIPA revisions typically cover the preceding three years, but occasionally they extend back earlier. Information about the revisions made for a particular release of the Z.1 is given in the text that accompanies the data in the release.

Seasonal Adjustment

In the Z.1 statistical release, quarterly flows are presented at seasonally adjusted annual rates. Seasonal adjustment is the application of a set of statistical procedures to an economic time series to remove the effect of regular variation of data within the year. Many series show seasonal variation. For example, individuals regularly increase their use of consumer credit at certain times of the year as they make holiday or other seasonal purchases. Figure 15.1 illustrates the effect of seasonally adjusting the quarterly series for consumer installment credit in the flow-of-funds accounts for the years 1976 through 1992. The plot of the unadjusted series shows the sharp drop in credit use in the first quarter of each year. When the recurring seasonal movements are removed from the data, as shown in the plot of seasonally adjusted data, changes in the data that are related to nonseasonal factors, such as the business cycle and long-term trends, can be seen more clearly.

Figure 15.1 Consumer Installment Borrowing, 1976–92



From the Z.1 release: Table F.100, line 39 (seasonally adjusted data, series fa153166100.q; unadjusted data, fu153166100.q).

Data at seasonally adjusted annual rates are calculated by multiplying the seasonally adjusted quarterly flow figures by four. These data at annual rates are an estimate of the annual total, should the quarterly seasonally adjusted flow continue for the entire year. The use of annual rates allows comparison of the data for a particular quarter with data for entire years or with data for other periods of different length but also expressed at annual rates.

The flow-of-funds data are seasonally adjusted with the X11ARIMA/88 procedure developed by Statistics Canada.¹ The procedure first models the data using one of several ARIMA (autoregressive integrated moving average) models. It then extrapolates unadjusted data one year forward and backward at the ends of the series and seasonally adjusts the new, longer series using the X-11 seasonal adjustment method, which smooths the series by sequentially calculating several kinds of moving averages.² The extrapolation step in the X11ARIMA/88 results in better estimates than those produced by the X-11 procedure alone. An additive adjustment is used on flow-of-funds series, and the output of the procedure is a set of seasonal factors for each series that are added to the unadjusted flow data to obtain the seasonally adjusted flows.

In the flow-of-funds accounts, levels data are not seasonally adjusted, and not all flow data are adjusted. The decision to seasonally adjust a particular series is made at the time of the annual revision of the accounts. As part of the annual revision, staff members of the Flow-of-Funds Section perform an *F*-test on all the basic inputs in the flow-of-funds data base, including unpublished intermediate series, to determine whether the data for a series exhibit statistically significant seasonal variation and whether the seasonal variation is stable over the most

recent period, usually the past ten years. If the *F*-test indicates that a series has exhibited a stable seasonal pattern over the period in question, the behavior of the series is further examined by an economist who regularly follows the subject matter of the series to determine whether the series should in fact be adjusted.

Interpolation

Some of the information used in calculation of the flow-of-funds accounts is produced or published by the original sources only as annual data. Before the information can be used in the accounts, the annual data must be converted to quarterly form. Staff members of the Flow-of-Funds Section do so using the K-L method or the ratio method.

K-L Method

The K-L method is an interpolation procedure that creates quarterly values based on the behavior of the series in preceding and subsequent years.³ The method involves the following formulas:

$$QU1_t = (11AU_{t-1} + 5AU_{t+1} - 6N_t + 32)/64$$

$$QU2_t = (9AU_{t-1} + 7AU_{t+1} - 10N_t + 32)/64$$

$$QU3_t = (7AU_{t-1} + 9AU_{t+1} - 10N_t + 32)/64$$

$$QU4_t = AU_t - QU1_t - QU2_t - QU3_t$$

where QU_i is the unadjusted flow for the i th quarter; t is the period or year in question; AU is the annual flow to be interpolated; and N is calculated as

$$N_t = AU_{t-1} + AU_{t+1} - 2AU_t$$

Amounts outstanding, or levels, are calculated as follows:

$$QLA_{t-1} = AL_{t-1}$$

$$QL1_t = QLA_{t-1} + QU1_t$$

$$QL2_t = QL1_t + QU2_t$$

$$QL3_t = QL2_t + QU3_t$$

$$QL4_t = AL_t$$

where QL_i is the level for the i th quarter, and AL is the level at the end of the year in question for the annual series to be interpolated. For series that have breaks resulting from statistical discontinuities or revaluations (see the section above on series breaks), the breaks are retained by performing the K-L procedure separately on the flows and on the first differences of the levels and then changing the levels by the amount of the interpolated first differences (but retaining the interpolated flows).⁴

The quarterly series derived by the K-L method display smooth intra-year movements that are based on the earlier and subsequent annual movements. The procedure requires no additional information and is suitable for calculating values for a large number of series. Quarterly movements in the created series, however, do not necessarily reflect changes resulting from economic conditions, a deficiency of the K-L method.

Ratio Method

In the ratio method, the series being interpolated is first calculated as a proportion of an annual total flow or of the year-end level for a related series for which quarterly data are available (referred to as the "base" series); a different proportion, or ratio, is calculated for each year. The quarterly values in the base series are then multiplied by the ratio for each year to obtain quarterly values for the series being interpolated.

Series for capital consumption allowances provide an example. Only annual data are available for capital consumption allowances on nonresidential equipment and structures of financial institutions. However, quarterly data are available on total capital consumption allowances, which can serve as the base series. The ratio of capital consumption allowances in the series in question to that in the base series is calculated for each year, and the quarterly values are obtained by multiplying the calculated ratios by the quarterly value for total capital consumption allowances.

The formulas for calculating the ratio are as follows:

$$R_t = A_t / (BQ1_t + BQ2_t + BQ3_t + BQ4_t) \text{ for a flow series}$$

$$R_t = A_t / BQ4_t \text{ for a levels series}$$

$$AQ1_t = R_t BQ1_t$$

$$AQ2_t = R_t BQ2_t$$

$$AQ3_t = R_t BQ3_t$$

$$AQ4_t = R_t BQ4_t$$

or

$$AQ4_t = A_t - AQ1_t - AQ2_t - AQ3_t$$

where R is the value of the ratio; A is the annual total for the series to be interpolated; BQ_i is the value of the base series for the i th quarter; and the values for AQ_i are the quarterly values that result from the procedure. For flow series, the sum of the four values for AQ_i may be slightly different from the annual total (A_t) because of rounding errors; to eliminate this problem, the flow value for one quarter can be calculated as a residual. The ratio for the preceding year is used for current quarters when data for the entire year are not yet available.

Data calculated using the ratio method must be reviewed carefully when the base series reflects economic events that might distort the results. For example, in the third quarter of 1992 BEA made a large adjustment to total capital consumption allowances in the NIPA because of damage caused by hurricanes. In cases like this, it may not be appropriate for all series that are calculated as a ratio to the base series to show a similarly large change.

Extrapolation

In some instances—when data are available only with a long lag, when the publication schedule does not coincide with that of the flow-of-funds accounts, or when a temporary estimate is needed for a number that will arrive late—staff members of the Flow-of-Funds Section estimate the data for current quarters. For series that exhibit little variation over a year, or whose current behavior is not well known, an extrapolation procedure is used to estimate current values. The estimates are based on the past behavior of the series.

The formula for calculating seasonally adjusted flow values by this procedure is as follows:

$$SA_t = [4(7I_t - 3J_t + 4)]/32$$

where SA is the seasonally adjusted flow,

$$I_t = SA_{t-2} + SA_{t-1}$$

$$J_t = SA_{t-4} + SA_{t-3}$$

and t is the period or quarter in question.

If the series is not seasonally adjusted, the unadjusted flow equals the seasonally adjusted flow:

$$U_t = SA_t$$

where U is the unadjusted flow. If the series is seasonally adjusted, the unadjusted flow is calculated as

$$U_t = SA_t + [4(U_{t-4} - SA_{t-4}) + U_{t-8} - SA_{t-8} - 2(U_{t-12} - SA_{t-12})]/3$$

If the flow series has a corresponding levels value, the level is calculated as follows:

$$L_t = L_{t-1} + U_t$$

...

Format of the Tables

Line Numbering and Subentries

The tables in this part of the guide correspond to the flow tables in the Federal Reserve Board's Z.1 statistical release, and each line in the Z.1—called a “main line” or a “main series” here—appears in the following tables in boldface type with the same line number.

Subentries to a main line—identified by the number of the main line plus a letter or letters, for example, 2a—are, in most cases, series that are components of the main line. The explanation of the main series, which appears in the rightmost column of the table, lists all the component series that enter into its calculation. If a component series also appears as a subentry earlier in the same table, however, or as a main line elsewhere in the table, the explanation for the main line cites the line number of the component series but the series does not appear as a subentry. Therefore, the subentries to a main line do not necessarily constitute the complete set of components of the main series.

Also, because some calculations begin with a total and subtract component series to obtain the series in question, and because some lines are calculated as percentages of other lines, series shown as subentries are not necessarily conceptual subcategories of the main line under which they appear. Subentries appear in approximately the same order as the sector and transaction categories they refer to in the Z.1 release—for example, subentries for the household sector appear before subentries for the business sectors.

Terminology

The terminology used in the tables to refer to a series varies somewhat depending on the circumstances. For example, series that represent assets of a sector may be identified as being “assets of,” “held by,” “receivable by,” or “owed to” that sector. Similarly, liabilities may be identified as “liabilities of,” “debt of,” “owed by,” or “payable by” the sector. Loan borrowings are “loans to” the sector, and other sources of funds are “funds raised by” or “equity issuance by”

the sector. For example, "large time deposits held by savings and loan associations" are savings and loan assets.

Dollar Values

The data shown in the tables are in billions of dollars, rounded to the nearest \$100 million. When the value for a series is less than \$50 million, so that it rounds to zero, it is shown as an asterisk. An entry of ".0" means the value is exactly zero.

Two Illustrative Derivation Tables

[Note: Tables 15.1 and 15.2 that follow are examples of the many derivation tables in the guide. These particular tables permit the reader to trace the derivation of the flow-of-funds estimate for the household sector's change in checkable deposits and currency. See Table 15.1, line 19.—Ed.]

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Table 15.1

F.100 Households, Personal Trusts, and Nonprofit Organizations

The household sector includes individual households, personal trusts, and nonprofit institutions such as charitable organizations, private foundations, schools, churches, labor unions, and hospitals. Recent estimates indicate that nonprofit institutions account for 3 percent to 4 percent of assets in this sector, and personal trusts managed by banks hold roughly 4 percent. Moreover, bank personal trusts hold more than 23 percent of the household sector's commercial paper and 10.5 percent of its mutual fund shares and corporate equities.

For most categories of financial assets and liabilities, the household sector value is calculated as a residual. That is, amounts held or owed by other sectors are subtracted from a known total, with the remainder allocated to the household sector. For example, the total of federal government securities is obtained from the *Monthly Treasury Statement of Receipts and Outlays of the United States Government* (referred to herein as Monthly Treasury Statement, or MTS). The amounts held by other sectors (such as banks, savings and loans, and insurance companies) are largely known and are subtracted from this total; the household sector is assigned the remainder. The series calculated in this manner are designated by "calculated as a residual" in the table and carry a reference to the transaction table (e.g., table F.210) that lists the sectors included in the calculation. A few series, such as consumer credit, are available for the household sector directly. In contrast to the practice in some countries, the household sector statement in the U.S. flow-of-funds accounts does not include transactions of unincorporated businesses, which are shown separately in the nonfarm noncorporate and farm business sectors (tables F.102 and F.103).

(continued)

Table 15.1

F.100 Households, Personal Trusts, and Nonprofit Organizations
(billions of dollars)

	F0F Code	1988	1989	1990	1991	
1 Personal income	156010001	4,075.9	4,380.3	4,664.2	4,628.3	1
2 - Personal taxes and nontaxes	156210005	527.8	593.3	621.3	618.7	2
3 = Disposable personal income	156012005	3,548.2	3,787.0	4,042.9	4,009.6	3
4 - Personal outlays	156900005	3,392.5	3,634.9	3,867.3	4,089.9	4
5 = Personal saving, NIPA (1)	156007105	155.7	152.1	175.6	199.6	5
6 + Credits from govt. insurance	153154005	84.9	95.3	88.8	82.3	6
7 + Net durables in consumption	155011045	112.6	109.3	85.1	61.6	7
8 + Capital consumption	156300005	423.5	443.1	494.9	526.8	8
9 = Gross saving	156000105	776.7	817.7	843.5	849.6	9
10 Gross investment	155090005	803.1	917.8	910.5	865.2	10
11 Capital expend. net of sales	155050005	675.2	699.4	691.5	655.6	11
12 Residential construction	155012005	286.6	285.6	198.7	172.2	12
13 Consumer durable goods	155011001	437.1	459.4	464.3	446.1	13
14 Nonprofit plant and equip.	155013001	31.5	34.4	34.5	37.4	14
15 Net financial investment	155000005	127.9	218.4	218.8	209.6	15
16 Net acq. of financial assets	154090005	453.4	528.8	474.3	388.1	16
17 Dep. & cr. mkt. instr.	154003205	367.1	388.4	289.9	3.5	17
18 Deposits	154000005	168.2	290.9	87.6	17.6	18
19 Checkable dep. & curr.	153020005	-8	14.9	22.4	56.8	19
20 Small time & savg. dep.	153031005	115.3	88.8	53.6	10.8	20
21 Large time deposits	153030005	34.3	11.2	-32.6	-71.8	21
22 Money mkt. fund shares	153034005	23.5	88.9	44.2	28.6	22
23 Credit mkt. instruments	154004005	198.9	179.5	177.3	-14.1	23
24 U.S. govt. securities	153061005	123.3	183.5	181.7	-75.2	24
25 Tax-exempt securities	153062005	43.5	42.6	34.3	21.8	25
26 Corporate & fgn. bonds	153063005	-35.6	-9.8	6.5	42.9	26
27 Mortgages	153065005	25.2	19.5	21.3	18.7	27
28 Open market paper	153069175	31.6	-1	12.4	-22.5	28
29 Mutual fund shares	153064205	2.3	41.9	50.7	129.2	29
30 Corporate equities	153064105	-122.8	-139.1	-27.2	-68.7	30
31 Life insurance reserves	153040005	25.3	28.8	25.7	22.8	31
32 Pension fund reserves	153050005	195.6	221.4	186.8	268.1	32
33 Net inv. in noncorp. bus.	153000005	-31.2	-32.5	-39.3	-1.3	33
34 Security credit	153067005	1.8	12.3	9.2	25.8	34
35 Miscellaneous assets	153090005	16.4	14.9	8.4	10.8	35
36 Net increase in liability	154100005	325.5	309.4	258.5	178.5	36
37 Credit market instruments	154102005	318.4	308.4	254.2	168.8	37
38 Home mortgages	153166105	234.8	238.5	212.9	137.1	38
39 Installment cons. credit	153166100	54.8	41.6	19.6	-6.3	39
40 Other consumer credit	153166300	-4.7	.1	-2.1	-6.1	40
41 Tax-exempt debt	153162005	1.3	2.5	4.1	8.8	41
42 Other mortgages	153165603	27.8	13.4	10.9	18.4	42
43 Bank loans n.e.s.	153160005	-1.1	2.5	-2.6	4.1	43
44 Other loans	153169005	4.5	7.1	11.2	10.1	44
45 Security credit	153167205	1.7	-1.8	-3.7	16.3	45
46 Trade debt	153170003	4.7	6.2	4.9	7.5	46
47 Miscellaneous	153077003	.4	.8	.1	1.7	47
48 Discrepancy	157005005	-26.5	-100.8	-66.8	-15.6	48

(1) See table F.8 for derivation of alternative personal saving measures.

Remarks:

Net physical investment:

(A) Residential construction expenditures	155012005	286.6	285.6	198.7	172.2	49
- Capital consumption	155012005	88.0	88.0	85.1	97.5	50
= Net investment	155012005	198.6	197.6	113.6	74.6	51
- Home mortgages	153166105	234.8	238.5	212.9	137.1	52
= Excess net investment	155004205	-136.2	-140.9	-99.3	-62.4	53
(B) Consumer durables expenditures	155011001	437.1	459.4	464.3	446.1	54
- Capital consumption	155011001	112.6	109.3	85.1	61.6	55
= Net investment	155011001	324.5	350.1	379.2	404.5	56
- Consumer credit	153166005	58.1	41.7	17.5	-12.5	57
= Excess net investment	155004105	266.4	308.4	361.7	417.0	58

(continued)

Table 15.1 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
1. Personal income	156010001	4,828.3	SCB, NIPA table 2.1, line 1, Personal income.
2. Personal taxes and nontaxes	156210005	618.7	Sum of lines 2a and 2b.
2a. Personal tax and nontax receipts of state and local governments	206210001	145.4	SCB, NIPA table 3.3, line 2, Personal tax and nontax receipts.
2b. Personal tax and nontax receipts of the U.S. government	316210001	473.4	SCB, NIPA table 3.2, line 2, Personal tax and nontax receipts.
3. Disposable personal income	156012005	4,209.6	Line 1 less line 2.
4. Personal outlays	156900005	4,009.9	Sum of lines 4a, 4b, and 4c.
4a. Personal consumption expenditures	156901001	3,887.7	SCB, NIPA table 1.1, line 2, Personal consumption expenditures.
4b. Interest paid by consumers to business	156901103	112.6	SCB, NIPA table 2.1, line 28, Interest paid by persons.
4c. Net personal transfer payments to foreigners	156901203	9.7	SCB, NIPA table 2.1, line 29, Personal transfer payments to rest of the world (net), or NIPA table 4.1, line 17, Transfer payments from persons (net).
5. Personal saving (NIPA measure)	156007105	199.6	Line 3 less line 4. See table F.8 for alternative measures of personal saving.
6. Credits from government insurance transferred to the household sector	363154005	82.3	Sum of lines 6a, 6b, 6c, and 6d. Adding these series transfers portions of saving to the household sector from the U.S. government and from the general funds of state and local governments. A corresponding subtraction appears on each of the two FOF government tables (F.105, line 9, and F.106, line 11). This adjustment is made in order to maintain consistency with the treatment of private life insurance and retirement reserves.
6a. Change in life insurance reserve liabilities of the U.S. government	313140003	.1	Level from Budget of the U.S. government, part 4, Department of Veterans Affairs, Trust Funds, National service life insurance, U.S. government life insurance, and Veterans special life insurance, total assets. Adjusted to calendar-year basis and converted to quarterly series using K-L method. Unadjusted flow is the change in the level.

(continued)

Table 15.1 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
6b. Change in federal employee retirement reserve liabilities of the U.S. government	313151000	24.3	Level from Monthly Treasury Statement, table 6, schedule D, Civil service retirement and disability fund: Public debt securities. Unadjusted flow is the change in the level. The complete financial statement for the civil service fund appears in the December issue of the Treasury Bulletin.
6c. Change in railroad retirement reserve liabilities of the U.S. government	313152000	1.2	Level from Monthly Treasury Statement, table 6, schedule D, Railroad Retirement Board. Unadjusted flow is the change in the level. The complete financial statement for the retirement board appears in the December issue of the Treasury Bulletin.
6d. Change in pension fund reserve liabilities of state and local government retirement funds, equal to the change in their reported total assets	224090003	56.7	Level at end of fiscal year from Finances of Employee-Retirement Systems of State and Local Governments, table 1, sum of Cash and deposits, Securities, and Other investments. Data are annual; series is converted to quarterly using data from Finances of Selected Public Employee Retirement Systems, table 1, Total cash and security holdings. Unadjusted flow is the change in the level.
7. Expenditures on consumer durable goods, included in personal consumption expenditures, net of capital consumption allowances on consumer durable goods	155011065	41.6	Line 13 less line 7a. Expenditures on consumer durable goods are considered current outlays in NIPA but investment in the FOF accounts. To adjust personal saving for the difference in treatment while maintaining balance between household gross saving and gross investment, the series for expenditures on durables is added to both saving and investment. Capital consumption allowances on durables, not included in NIPA, is added to other capital consumption allowances in line 8 and is deducted from durables expenditures in line 7.
7a. Capital consumption allowances on consumer durable goods owned by the household sector	156300303	404.5	Capital consumption allowances on all durable goods owned by consumers, valued at current cost, from BEA Wealth Data Tape (section 1, series 567, category 4). Data are annual; series is converted to quarterly by ratio method, using NIPA total capital consumption allowances (FOF series 896300003, table F.1, line 61) as the denominator.

(continued)

Table 15.1 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
8. Capital consumption allowances for the household sector	156300005	526.0	Sum of lines 7a, 8a, and 8b.
8a. Capital consumption allowances on nonresidential equipment and structures owned by nonprofit organizations (household sector)	156300103	24.1	SCB, NIPA table 8.18, line 103, Consumption of fixed capital, Rental value of buildings and equipment owned and used by nonprofit institutions serving individuals. Data are annual; series is converted to quarterly by K-L method.
8b. Capital consumption allowances on residential structures owned by the household sector	156300203	97.5	Capital consumption allowances on owner-occupied nonfarm residential structures, valued at current cost, from BEA Wealth Data Tape (section 1, series 401, category 4). Data are annual; series is converted to quarterly by ratio method, using NIPA total capital consumption allowances (POF series 896300003, table F.1, line 61) as the denominator.
9. Gross saving of the household sector	156000105	849.6	Sum of lines 5, 6, 7, and 8.
10. Gross investment by the household sector	155090005	865.2	Sum of lines 11 and 15.
11. Capital expenditures by the household sector, net of sales	155050005	655.6	Sum of lines 12, 13, and 14.
12. Fixed residential investment by the household sector	155012005	172.2	Line 12a less lines 12b, 12c, and 12d, and less 33 percent of line 12e.
12a. Fixed residential investment by private domestic nonfinancial sectors	195012001	190.3	SCB, NIPA table 1.1, line 11, Gross private domestic investment, residential.
12b. Fixed residential investment by nonfarm nonfinancial corporate business	105012001	1.1	Investment in residential structures by corporate business (assumed to be all nonfinancial), valued at historical cost, from BEA Wealth Data Tape (section 5, series 29). Data are annual; series is converted to quarterly using quarterly data on NIPA total residential investment (POF series 195012001, table F.1, line 9).
12c. Fixed residential investment by farm business	135012001	1.3	Investment in residential structures by farm business, valued at historical cost, from BEA Wealth Data Tape (section 5, sum of series 2 and 4). Data are annual; series is converted to quarterly using quarterly data on NIPA total residential investment (POF series 195012001, table F.1, line 9).

(continued)

Table 15.1 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
12d. Fixed residential investment by nonfarm noncorporate business	115012001	15.5	Investment in residential structures by sole proprietorships and partnerships, valued at historical cost, from BEA Wealth Data Tape (section 5, series 31). Data are annual; series is converted to quarterly using quarterly data on NIPA total residential investment (POF series 195012001, table F.1, line 9).
12e. Fixed investment by real estate investment trusts	645013003	.6	Investment in nonresidential equipment and structures by holding and other investment offices, valued at historical cost, from BEA Wealth Data Tape (section 4, series 291), multiplied by the ratio of two levels: (1) nonresidential equipment and structures owned by REITs, at book value; and (2) nonresidential equipment and structures owned by holding and other investment offices, valued at historical cost, from BEA Wealth Data Tape (section 2, series 147, category 3). Nonresidential equipment and structures of REITs at book value estimated as 56 percent of property owned (POF series 645019003, table F.128, line 6b); estimate assumes that two-thirds of the property is nonresidential, with 83 percent of the value of nonresidential property assumed to be attributable to equipment and structures, and the rest to land. Data are annual; series is converted to quarterly by ratio method, using NIPA total investment in nonresidential plant and equipment (POF series 895013001, table F.1, line 15) as the denominator.
13. Investment in consumer durable goods by the household sector	155011001	446.1	SCB, NIPA table 1.1, line 3, Personal consumption expenditures, durable goods.
14. Fixed nonresidential investment by nonprofit organizations (household sector)	155013003	37.4	SCB, NIPA table 8.18, line 124, Net purchases of buildings and equipment owned and used by nonprofit institutions serving individuals. Data are annual; series is converted to quarterly by K-L method.
15. Net financial investment by the household sector	155000005	209.6	Line 16 less line 36.
16. Net acquisition of financial assets by the household sector	154090005	388.1	Sum of lines 17, 29, 30, 31, 32, 33, 34, and 35.
17. Change in deposits and credit market assets of the household sector	154003205	3.5	Sum of lines 18 and 23.

(continued)

Table 15.1 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
18. Change in deposits held by the household sector	154000005	17.6	Sum of lines 19, 20, 21, and 22.
19. Change in checkable deposits and currency held by the household sector	153020005	50.8	Calculated as residual. See table F.204, line 15.
20. Change in small time and savings deposits held by the household sector	153031005	10.0	Calculated as residual. See table F.205, line 8.
21. Change in large time deposits held by the household sector	153035005	-71.8	Calculated as residual. See table F.206, line 10.
22. Change in money market mutual fund shares held by the household sector	153034005	28.6	Calculated as residual. See table F.207, line 2.
23. Change in credit market assets of the household sector	154004005	-14.1	Sum of lines 24 through 28.
24. Change in U.S. government securities held by the household sector	153061005	-75.2	Calculated as residual. See table F.211, line 18.
25. Change in tax-exempt securities held by the household sector	153062005	21.9	Calculated as residual. See table F.212, line 8.
26. Change in corporate and foreign bonds held by the household sector	153063005	42.9	Calculated as residual. See table F.213, line 11.
27. Change in mortgages held by the household sector	153065005	18.7	Calculated as residual. See table F.217, line 6; table F.218, line 7; table F.219, line 7; and table F.220, line 3. Also found in table F.216, line 16.
28. Change in open market paper held by the household sector	153069175	-22.5	Calculated as residual. See table F.223, line 11.
29. Net purchases of mutual fund shares by the household sector	153064205	129.2	Calculated as residual. See table F.214, line 3.

(continued)

Table 15.1 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
30. Net purchases of corporate equities by the household sector	153064105	-68.7	Calculated as residual. See table F.215, line 9.
31. Change in life insurance reserve assets of the household sector	153040005	22.0	Sum of lines 6a and 31a.
31a. Change in life insurance reserve liabilities of life insurance companies	543140003	21.9	Level from Life Insurance Fact Book, Reserves and Other Obligations, table on Policy Reserves, Life insurance, plus Supplementary contracts With life contingencies and Without life contingencies. Data are annual; series is converted to quarterly by K-L method. Unadjusted flow is the change in the level.
32. Change in pension fund reserve assets of the household sector	153050005	268.1	Sum of lines 6b, 6c, 6d, 32a, and 32b.
32a. Change in pension fund reserve liabilities of life insurance companies	543150003	81.4	Level from Life Insurance Fact Book, Reserves and Other Obligations, table on Policy Reserves, Annuities, individual and group. Data are annual; series is converted to quarterly by K-L method. Unadjusted flow is the change in the level.
32b. Change in pension fund reserve liabilities of private pension funds, equal to their net acquisition of financial assets	574090005	104.5	Table F.123, line 3.
33. Proprietors' net investment in all noncorporate business	153080005	-1.3	Sum of lines 33a, 33b, and 33c.
33a. Proprietors' net investment in unincorporated farm business	133180005	-9.5	Table F.102, line 24.
33b. Proprietors' net investment in nonfarm noncorporate business	113180005	-1.9	Table F.103, line 29.
33c. Proprietors' net investment in unincorporated security brokers and dealers	663180005	10.1	Table F.129, line 22.

Table 15.2

F.204 Checkable Deposits and Currency (billions of dollars)

Checkable deposits comprise demand deposits at commercial banks and foreign banking offices in the United States; travelers checks issued by nonbanks; negotiable order of withdrawal (NOW) accounts and automatic transfer service (ATS) accounts at depository institutions; credit union share drafts; and demand deposit liabilities of thrift institutions. Currency is U.S. currency and coin held outside the U.S. Treasury, Federal Reserve Banks, and the vaults of depository institutions. Total currency outstanding is known (about \$274 billion at the end of 1991), but holdings by individual sectors must be estimated.

Information on currency liabilities of the U.S. Treasury and the monetary authority comes from the *Federal Reserve Bulletin* (FR Bulletin); information on deposit liabilities comes primarily from reports of condition submitted by depository institutions to the federal regulatory authorities. Most of the data on holdings of checkable deposits by individual sectors are tabulated by trade associations and government agencies from the balance sheets of entities that make up the sectors; holdings of the household sector are the residual after the holdings of all other sectors have been subtracted from the total.

Billions of dollars					
	FOF Code	1988	1989	1990	1991
1 Net change in liabilities	795120005	43.2	6.1	44.2	75.8
2 Monetary authority	713120005	18.1	9.5	25.2	29.2
3 U.S. govt. cash & deposits	713123105	3.3	-2.4	2.8	8.8
4 Foreign deposits	713122605	.1	.2	-2.2	.6
5 Currency outside banks	713125005	14.7	11.7	22.6	19.8
6 Commercial banking	763120005	16.8	-3.8	22.1	37.8
7 U.S. government deposits	723123105	7.3	-3.4	5.3	5.5
8 Foreign deposits	763122605	-6.6	-5.5	-1.1	-2.8
9 Private domestic deposits	763129205	10.1	.1	16.8	34.3
10 Thrift institutions	495127005	8.3	.4	-3.1	8.7
11 Savings and loan assns.	453127005	5.1	-1.3	-4.9	1.8
12 Mutual savings banks	463127005	1.4	.1	.1	1.8
13 Credit unions	473127000	1.5	1.5	1.7	5.1
14 Net change in assets	795120005	43.2	6.1	44.2	75.8
15 Households	153020005	-8	14.9	22.4	50.8
16 Business	143020005	25.3	.5	-2.8	11.6
17 Farms	133020003	.5	.1	.4	.2
18 Nonfarm noncorporate	113020003	7.7	4.3	.5	1.0
19 Corporate	103020005	17.0	-3.8	-1.9	10.4
20 State/local governments	213020005	2.0	.6	-1.8	5.1
21 U.S. government	313020005	9.0	-14.2	4.8	27.4
22 Foreign	263020000	-6	-2	-3	-1.4
23 Financial sectors	795020005	5.0	.4	14.4	-6.4
24 Sponsored credit agencies	405020000	n	-1.3	-2	-7
25 Commercial banking	763020003	-6	-4	-1	-8
26 Savings and loan assns.	453020005	-5	.7	.2	1.8
27 Mutual savings banks	463020003	1.2	-1.4	-5	.2
28 Credit unions	473020000	.6	.6	.8	.6
29 Life insurance cos.	543020000	-3	.5	.1	.5
30 Other insurance companies	513020003	-1	.5	.5	-1.1
31 Private pension funds	573020003	1.4	-7	.1	-5
32 State/local govt. rtr. funds	225020003	.5	-3	1.5	.3
33 Finance companies	613020003	7.8	1.0	1.1	1.2
34 Mutual funds	653020003	.3	1.3	.2	3.4
35 Money market mutual funds	633020003	1.0	-6	11.3	-11.6
36 Brokers and dealers	663020003	1.9	.4	.5	-1
37 Mail float	905020005	2.5	5.2	5.8	-11.1

(continued)

Table 15.2 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
1. Change in liabilities of depository institutions and the monetary authority for checkable deposits and currency	793120005	75.8	Sum of lines 2, 6, and 10.
2. Change in checkable deposit and currency liabilities of the monetary authority	713120005	29.2	Sum of lines 3, 4, and 5.
3. Change in deposits held by the U.S. government at Federal Reserve Banks, including Treasury cash	713123105	8.8	Sum of lines 3a and 3b.
3a. Change in U.S. Treasury cash holdings (liability of the monetary authority)	713123203	.1	Level from FR Bulletin, table 1.11, line 16, Treasury cash holdings. Unadjusted flow is the change in the level.
3b. Change in liability of Federal Reserve Banks for the U.S. Treasury general account	713123730	8.7	Level from FR Bulletin, table 1.18, Liabilities, line 24, U.S. Treasury—general account. Also found in Monthly Treasury Statement, table 6, Means of Financing the Deficit, U.S. Treasury operating cash, FR account. Unadjusted flow is the change in the level.
4. Change in deposits held by foreigners at Federal Reserve Banks	713122605	.6	Sum of lines 4a and 4b, less line 4c.
4a. Change in deposits held by foreign official institutions at Federal Reserve Banks	713122003	.6	Level from FR Bulletin, table 1.18, Liabilities, line 25, Foreign—official accounts. Unadjusted flow is the change in the level.
4b. Change in deposits held by international organizations at Federal Reserve Banks	713122103	.0	Level provided by FR Bank of New York. Unadjusted flow is the change in the level.
4c. Change in deposits held by the International Monetary Fund at Federal Reserve Banks	713111403	*	Level provided by FR Bank of New York. Unadjusted flow is the change in the level.
5. Change in currency outside banks (liability of the monetary authority)	713125005	19.8	Line 5a less line 5b.
5a. Change in currency in circulation (liability of the monetary authority)	713124000	20.8	Level from FR Bulletin, table 1.11, line 15, Currency in circulation. Unadjusted flow is the change in the level.

(continued)

Table 15.2 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
5b. Change in vault cash held by U.S.-chartered commercial banks (liability of the monetary authority)	723025000	1.0	Level from quarterly Report of Condition for U.S.-chartered commercial banks, schedule RC-A, Currency and coin (series RCON0080). Unadjusted flow is the change in the level.
6. Change in checkable deposit liabilities of the commercial banking sector	763120005	37.8	Sum of lines 7, 8, and 9.
7. Change in checkable deposits held by the U.S. government at U.S.-chartered commercial banks	723123105	5.5	Sum of lines 7a and 7b.
7a. Change in transaction deposits held by the U.S. government at U.S.-chartered commercial banks	723123200	-2.2	Level from quarterly Report of Condition for U.S.-chartered commercial banks, schedule RC-E, Transaction accounts of the U.S. government (series RCON2202). Unadjusted flow is the change in the level.
7b. Change in demand notes owed to the U.S. government by U.S.-chartered commercial banks	723123300	7.7	Level from quarterly Report of Condition for U.S.-chartered commercial banks, schedule RC, Demand notes issued to the U.S. Treasury (series RCON2840). Unadjusted flow is the change in the level.
8. Change in checkable deposits held by foreigners in the commercial banking sector	763122605	-2.0	Sum of lines 4c and 22, less lines 4a and 4b.
9. Change in checkable deposits held by private domestic sectors in the commercial banking sector	763129205	34.3	Sum of lines 9a, 9b, and 9c, less lines 7a, 8, and 9d through 9h.
9a. Change in total transaction deposit liabilities of U.S.-chartered commercial banks	723126000	22.9	Level from quarterly Report of Condition for U.S.-chartered commercial banks, schedule RC-E, Total transaction accounts (series RCON2215). Unadjusted flow is the change in the level.
9b. Special cash items bias correction for deposit liabilities of U.S.-chartered commercial banks	723129993	.0	Adjustment required because the data on the money supply for 1959:Q4 through 1973:Q1 overstated cash items in process of collection. Deposits generating these cash items had not been included in the gross deposit data entering into the calculation of the money supply. For discussion of the adjustment, see "Money Stock Measures and Related Data," in Banking and Monetary Statistics, 1941-1970, p. 6.

(continued)

Table 15.2 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
9c. Change in total transaction deposit liabilities of foreign banking offices in the U.S.	753126003	-4	Level from quarterly Reports of Condition: for U.S. branches and agencies of foreign banks, schedule E, Total deposits and credit balances (series RCON1653); for Edge Act and agreement corporations, schedule C, Total deposits (RCON2215); and for New York State investment companies, schedule F, line 7, Total deposits and credit balances in transaction accounts (RCON2297). Unadjusted flow is the change in the level.
9d. Change in Federal Reserve float	713022003	-1.5	Level from FR Bulletin, table 1.11, line 10, Float. Unadjusted flow is the change in the level.
9e. Change in cash items in process of collection held by U.S.-chartered commercial banks	723022000	-6.9	Level from quarterly Report of Condition for U.S.-chartered commercial banks, schedule RC-A, Cash items in process of collection and unposted debits (series RCON0020). Unadjusted flow is the change in the level.
9f. Change in transaction deposit liabilities of U.S.-chartered commercial banks to the commercial banking sector	723120720	1.3	Level from quarterly Report of Condition for U.S.-chartered commercial banks, schedule RC-E, Total transaction accounts of commercial banks in the U.S. (series RCON2206). Unadjusted flow is the change in the level.
9g. Change in cash items in process of collection held by foreign banking offices in the U.S.	753022003	-4	Level from quarterly Reports of Condition: for U.S. branches and agencies of foreign banks, schedule A, Cash items in process of collection and unposted debits (series RCON0020); for Edge Act and agreement corporations, schedule A, Cash items in process of collection, unposted debits, and currency and coin (RCON0022); and for New York State investment companies, schedule C, line 1, Cash items in process of collection and unposted debits (RCON0020). Unadjusted flow is the change in the level.
9h. Change in transaction deposit liabilities of foreign banking offices in the U.S. to the commercial banking sector	753120723	-1	Level from quarterly Reports of Condition: for U.S. branches and agencies of foreign banks, schedule E, sum of Transaction accounts and credit balances owed to U.S. branches and agencies of other foreign banks (series RCON1643) and Transaction accounts and credit balances owed to other commercial banks in the U.S. (RCON1645); for Edge Act and agreement corporations, schedule C, Deposits in transaction accounts owed to commercial banks in the U.S. (RCON2206); and for New York State investment companies, schedule F, line 4, Deposits and credit balances of commercial banks in the U.S. in transaction accounts (RCON2291). Unadjusted flow is the change in the level.

(continued)

Table 15.2 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
10. Change in checkable deposit liabilities of thrift institutions	493127005	8.7	Sum of lines 11, 12, and 13.
11. Change in checkable deposit liabilities of savings and loan associations	453127005	1.8	Line 11a less line 12.
11a. Change in checkable deposit liabilities of savings and loan associations and mutual savings banks	443127003	3.6	Level from FR Board, internal Money File, sum of Other checkable deposits held by savings and loan associations (sum of series 130, 131, and 132) and Other checkable deposits held by mutual savings banks and federal savings banks (sum of 134, 135, and 136). Series based on depository institution data collected periodically. Unadjusted flow is the change in the level.
12. Change in checkable deposit liabilities of mutual savings banks	463127003	1.8	Level from quarterly Report of Condition for savings banks insured by BIF, schedule RC-E, Total transaction accounts (series RCON2215); and for federal savings banks insured by SAIF, assumed to be zero. Unadjusted flow is the change in the level.
13. Change in checkable deposit liabilities of credit unions	473127000	5.1	Level from FR Board, internal Money File, credit union share drafts (sum of series 138, 139, and 140, less series 145). Series based on depository institution data collected periodically. Unadjusted flow is the change in the level.
14. Change in checkable deposits and currency held by all sectors	793120005	75.8	Sum of lines 15, 16, 20, 21, 22, 23, and 37. Also equal to line 1.
15. Change in checkable deposits and currency held by the household sector	153020005	50.8	Sum of lines 5, 9, and 10, less lines 15a, 15b, 16, 20, and 23.
15a. Change in mail float on private demand deposits	903029200	2.0	Level is FOF Section estimate based on cash items in process of collection. Unadjusted flow is the change in the level.
15b. Change in mail float on state and local government demand deposits	903028003	.0	Level at end of fiscal year calculated by FOF Section from Government Finances; series is converted to quarterly by K-L method. Unadjusted flow is the change in the level.

(continued)

Table 15.2 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
16. Change in checkable deposits and currency held by all nonfinancial business	143020005	11.6	Sum of lines 17, 18, and 19.
17. Change in checkable deposits and currency held by farm business	133020003	.2	Level from Economic Indicators of the Farm Sector, National Financial Summary, table 51. Other financial assets, excluding household assets. Data are annual; series is converted to quarterly by K-L method. Unadjusted flow is the change in the level.
18. Change in checkable deposits and currency held by nonfarm noncorporate business	113020003	1.0	Level is POF Section estimate based on SOI data for partnerships and sole proprietorships. Data are annual; series is converted to quarterly by K-L method. Unadjusted flow is the change in the level.
19. Change in checkable deposits and currency held by nonfarm nonfinancial corporate business	103020005	10.4	Line 19a less lines 19b and 19c, less line 19d net of 19e.
19a. Change in deposits and currency held by nonfarm nonfinancial corporate business	103020000	21.0	Level from FR Bulletin, table 1.49 (currently suspended), line 2, Cash. Includes currency, U.S. demand and time deposits, and foreign deposits. Since 1986:Q1, value has been an POF Section estimate based on quarterly data from the QFR, multiplied by the most recent SOI/QFR benchmark ratio for total deposits held. Unadjusted flow is the change in the level.
19b. Change in large time deposits held by nonfarm nonfinancial corporate business	103035000	3.7	Level is POF Section estimate based since 1986:Q1 on quarterly data from the QFR, multiplied by the most recent SOI/QFR benchmark ratio for time deposits held. Unadjusted flow is the change in the level.
19c. Change in cash held by mutual funds before 1963	653020103	.0	Value has been zero since 1962:Q1. Before 1965, cash held by mutual funds was included with corporate cash holdings.
19d. Change in foreign deposits held by U.S. private sectors	263191003	1.5	Unadjusted flow and level from SCB, USIT table 8, sum of line 17, Deposits, and line 18, Negotiable and readily transferable instruments (mostly certificates of deposit); plus USIT table 7, line A5, Deposits, all flows with sign reversed.
19e. Change in foreign deposits held by money market mutual funds	633091003	-5.4	Level from Trends in Mutual Fund Activity, table C, Eurodollar certificates of deposit. Unadjusted flow is the change in the level.

(continued)

Table 15.2 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
20. Change in checkable deposits and currency held by state and local government general funds	213020005	5.1	Line 20a less lines 15b and 32.
20a. Change in transaction deposits held by state and local governments at U.S.-chartered commercial banks	723128000	5.3	Level from quarterly Report of Condition for U.S.-chartered commercial banks, schedule RC-E, Total transaction accounts of states and political subdivisions in the U.S. (series RCON2203). Unadjusted flow is the change in the level.
21. Change in checkable deposits and currency held by the U.S. government	313020005	27.4	Sum of lines 21a and 21b, less line 21c and less 50 percent of line 21d.
21a. Change in reported cash balance held by the U.S. government	313024000	16.6	Level from Monthly Treasury Statement, table 6, Means of Financing the Deficit, U.S. Treasury operating cash. Unadjusted flow is the change in the level.
21b. Change in other cash and monetary assets of the U.S. government	313026003	7.8	Level from Monthly Treasury Statement, Means of Financing the Deficit, Other cash and monetary assets. Unadjusted flow is the change in the level.
21c. Change in small time and savings deposits held by the U.S. government	313031003	.1	Level from quarterly Report of Condition for U.S.-chartered commercial banks, schedule RC-E, Nontransaction deposits owed to the U.S. government (series RCON2520). Unadjusted flow is the change in the level.
21d. Net acquisition of foreign currencies by U.S. official agencies	263111503	-6.3	Level from FR Bulletin, table 3.12, line 5, Foreign currencies. Unadjusted flow from SCB, USIT table 1, line 38, Foreign currencies, with sign reversed.
22. Change in U.S. checkable deposits and currency held by foreigners	263020000	-1.4	Level from SCB, USIT table 9, sum of line A10, U.S. banks' own liabilities, Demand deposit liabilities to foreign official agencies; and line B12, U.S. banks' own liabilities, Demand deposit liabilities to other foreigners. Unadjusted flow is the change in the level.
23. Change in checkable deposits and currency held by financial sectors	793020005	-6.6	Sum of lines 24, 25, 26, and 27 through 36.

(continued)

Table 15.2 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
24. Change in checkable deposits and currency held by federally sponsored credit agencies	403020000	-.7	Level from combined statement of condition for FHLBs (Cash) and from the following periodic financial statements (Cash and investments, with cash estimated by POF Section): Farm Credit System quarterly information statement for farm credit agencies, balance sheet for SLMA, quarterly financial statement for FHLMC, and balance sheet for FNMA. Unadjusted flow is the change in the level.
25. Change in checkable deposits and currency held by the commercial banking sector (banks in U.S.-affiliated areas)	743020003	-.8	Year-end level from Reports of Condition: for banks located in U.S.-affiliated areas, schedule RC, Cash and balances due from depository institutions (sum of series RCON0081 and RCON0071); and for branches of U.S. banks located in U.S.-affiliated areas, sum of Cash and cash items in process of collection (RCFN0022), Balances due from U.S. banks (RCFN0033), and Balances due from foreign banks (RCFN0034). Data are annual; series is converted to quarterly by K-L method. Unadjusted flow is the change in the level.
26. Change in checkable deposits and currency, excluding deposits at Federal Reserve Banks, held by savings and loan associations	453020005	1.8	Line 26a less line 26b.
26a. Change in checkable deposits and currency, including deposits at Federal Reserve Banks, held by savings and loan associations	453020003	1.3	Level from Thrift Financial Report, schedule SC, Cash and non-interest-earning deposits (series SVGL0626). Unadjusted flow is the change in the level.
26b. Change in reserve deposits held by savings and loan associations at Federal Reserve Banks	453013003	-.5	Level from FR Board, internal Money File, Savings and loan association reserves at FR Banks (series 1383). Series based on depository institution data collected periodically. Unadjusted flow is the change in the level.
27. Change in checkable deposits and currency held by mutual savings banks	463020003	.2	Level from quarterly Report of Condition for savings banks insured by BIF, schedule RC, Cash and balances due from depository institutions (sum of series RCFD0081 and RCFD0071); and from Thrift Financial Report for federal savings banks insured by SAIF, schedule SC, Cash and non-interest-earning deposits (SVGL0626). Unadjusted flow is the change in the level.

(continued)

Table 15.2 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
28. Change in checkable deposits and currency held by credit unions	473020000	.6	Level from Monthly Credit Union Estimates, table on National Credit Union Aggregates, Cash. Unadjusted flow is the change in the level.
29. Change in checkable deposits and currency held by life insurance companies	543020000	.5	Level from Distribution of Investments of U.S. Life Insurance Companies, Cash and other, apportioned to cash and miscellaneous assets using the proportional split that existed in 1989:Q4, the last quarter in which these transaction categories were reported separately. Unadjusted flow is the change in the level.
30. Change in checkable deposits and currency held by other insurance companies	513020003	-1.1	Level from Best's Aggregates and Averages, Property-Casualty, table on Consolidated Industry Totals, Assets, line 6.1, Cash on hand and on deposit. Data are annual; series is converted to quarterly by K-L method. Unadjusted flow is the change in the level.
31. Change in checkable deposits and currency held by private pension funds	573020003	-.5	Level from DOL tabulation of submissions of IRS/DOL/PBGC Form 5500, Annual Return/Report of Employee Benefit Plan, line 34a, Total non-interest-bearing cash; and from Trust Assets of Financial Institutions, table B-2D, portions of total assets of Short-term investment funds and Diversified balanced funds. Data from both sources are annual and appear with lags of several years; series is converted to quarterly and estimated for current periods using proprietary Trust Universe Comparison Service data on assets of employee benefit plans obtained from Wilshire Associates. Unadjusted flow is the change in the level.
32. Change in checkable deposits and currency held by state and local government retirement funds	223020003	.3	Level is FOF Section estimate based on unpublished data provided by Bureau of the Census from material collected for Finances of Selected Public Employee Retirement Systems. Unadjusted flow is the change in the level.
33. Change in checkable deposits and currency held by finance companies	613020003	1.2	Level is FOF Section estimate based on most recent FR Board quinquennial survey of finance companies. Unadjusted flow is the change in the level.

(continued)

Table 15.2 (continued)

Component	Code	1991 value (billions of dollars)	Explanation
34. Change in checkable deposits and currency held by mutual funds	653020003	3.6	Level estimated as Trends in Mutual Fund Activity, table 1, Total net assets, multiplied by 0.01527. Ratio is historical minimum ratio of cash to total assets in detailed mutual fund statements that are no longer available. Unadjusted flow is the change in the level.
35. Change in checkable deposits and currency held by money market mutual funds	633020003	-11.6	Level from Trends in Mutual Fund Activity, table C, Cash reserves. Unadjusted flow is the change in the level.
36. Change in checkable deposits and currency held by security brokers and dealers	663020003	-1	Level from SBC tabulation of FOCUS and FOGS reports, Cash (series F750) plus Cash segregated in compliance with federal and other regulations (F760). Unadjusted flow is the change in the level.
37. Change in small float on demand deposits	903020005	-11.1	Sum of lines 3, 5, 7, 9, and 10, less lines 15, 16, 20, 21, and 23.

Notes

1. Estela Bee Dagum, *The X11ARIMA/88 Seasonal Adjustment Method, Foundations and User's Manual* (Ottawa: Statistics Canada 1988).
2. Julius Shiskin, Allan H. Young, and John C. Musgrave, "The X-11 Variant of Census Method II Seasonal Adjustment," Technical Paper 15, rev. (Washington, DC: U.S. Department of Commerce, Bureau of the Census, 1967).
3. The K-L method is named after Hyman Kaitz and Maurice Liebenberg, former statisticians at the U.S. Department of Commerce who developed a similar method of converting annual data to quarterly.
4. Alternatively, the amount of the break can be inserted manually in a particular quarter so that the discrepancy affects only that period.

JOHN C. DAWSON

How to Estimate the Business Sources and Uses of Funds Statement: Ghana

(1977)

This note describes the derivation and technical features of the financial data for Ghana state enterprises compiled by Bank of Ghana and World Bank staff during the summer and fall of 1977. The aggregated data for 22 state enterprises consist of a combined balance sheet, selected income statement items, and a derived sources and uses of funds statement.

Basic Data

The basic data consist almost entirely of the audited accounts of the enterprises. Exceptions are the 1975 Cocoa Marketing Board figures, which are estimates, and a few interpolated balance sheets which result from adjustments for changes in fiscal years. The audited accounts were assembled by the auditor general's State Enterprises Audit Department and by the State Enterprises Audit Corporation.

Sample Selection

The sampling procedure was ad hoc. From a list of all the wholly government-owned nonfinancial state enterprises, about 20 or 25 were selected, those judged to be large, active, and for which accounts existed for the 1971-75 period. Judging from sample and Ghana-wide estimates for plant and equipment expenditures, the sample is about 15 percent to 20 percent of the (private and public enterprise) business sector as a whole.

Excerpted, with permission, from John C. Dawson, "The Finance of State Enterprise in Ghana" (report on a World Bank mission to Ghana, July-August, 1977), sec. B, pp. 1-5, and sec. C, pp. 1-4.

Transcriptions

For each sample enterprise a transcription of accounts was made for as much as available of the 1971–76 period. The transcription for each year consisted of a balance sheet, selected income statement items, selected fixed asset account items, and an income surplus reconciliation account. Close attention was paid to ensuring comparability through time by adjusting for classification changes. A complete data set was obtained for 22 enterprises.

Standard Accounts

The transcription for each public enterprise was then transformed into a standard format: a standard balance sheet and a standard array of income statement flows required to derive the sources and applications of funds statement. Each standard format line item was then totaled over the 22 enterprises, and the totals were assembled to form combined standard accounts. Tables 16.1 and 16.2 present these totals in the standard format.

Assignment of Fiscal Years

Fiscal years ending on dates other than December 31 were all assigned to calendar years. Fiscal year endings from January 31 through May 30 were assigned to the preceding December 31. Fiscal year endings from June 30 to November 30 were assigned to the subsequent December 31.

Change of Fiscal Year End

Six enterprises changed their fiscal year end between 1971 and 1975, presenting the problem of reporting periods other than twelve months. These were handled in a variety of ways. One guideline here was the objective of being able to assign a balance sheet to each calendar year end. A second guideline was to assign the most recent segment of years in accordance with the assignment rule described above.

March 31 to June 30 (2 cases):

March and June balance sheets all assigned to the following December. One fifteen-month income period results for each case.

December 31 to June 30 (2 cases):

June balance sheets assigned to following year. An interpolated balance sheet is used for the missing calendar year end. One six-month income period results for each case.

December 31 to June 30 (1 case):

Interpolated June balance sheets obtained from December figures. June bal-

ance sheets assigned to the following year.

September 30 to June 30 (1 case):

September and June balance sheets all assigned to the following December. One nine-month income period results.

Entrants, Exits, Mergers

No enterprises wholly entered or left the sample between 1971 and 1975. However, in 1975 Ghana Cold Stores entered the sample via its merger with the State Fishing Corporation. The sources and applications of funds data (but not the balance sheet data) were adjusted to exclude the effects of this merger.

Surplus Adjustments

The basic data reveal many large direct adjustments to the surplus accounts, the nature of which cannot be identified. It is assumed here that unidentified surplus adjustments reflect current year receipts or disbursements accounted as applicable to prior year revenue or expense. These surplus adjustments have been combined with current net profit in calculating the current operating surplus (see Table 16.2).

Book Write-Ups and Write-Downs

Wherever they could be reasonably identified, the effects of asset revaluations and other write-ups or write-downs were removed (the entries reversed) in deriving the sources and applications of funds account.

Derivation of Sources and Uses of Funds Statement

A statement of balance sheet increments is first derived from Table 16.1. Then certain substitutions are made: (1) In place of the increment in net fixed assets, plant and equipment expenditures and (less) the depreciation *charge* from the income statement are substituted. Any discrepancy is assigned to other sources, net. The plant and equipment expenditures figure is taken either directly from the annual report of the company or estimated as the increment to gross fixed assets from the balance sheet. The depreciation charge becomes part of the operating surplus. (2) In place of the increment in equity, net profits after taxes, grants, and dividends is substituted. Table 16.2 shows the derivation of the operating surplus from this item, the depreciation charge from the income statement, and surplus adjustments. Verified equity and cash inflows can be added, as government cash equity grants here, but balance sheet increments to capital or equity accounts should not be used to estimate equity cash inflows. Any resulting discrepancy is assigned to other sources, net.

Table 16.1

22 Ghana State Enterprises—Combined Balance Sheet, 1971–75
(millions of cedis)

	1971	1972	1973	1974	1975
A Net fixed assets ¹	376	408	416	448	489
B					
C Current assets					
D Stocks	124	111	122	179	207
E Trade debtors	157	195	171	199	235
F Staff Debtors ²	11	12	17	21	28
G Temp. invmts ³	33	55	56	58	55
H Cash ⁴	42	66	57	85	91
I Other curr assets	27	34	35	33	39
J					
K Investments	64	34	31	34	35
L Other assets ⁵	7	7	7	7	9
M					
N Total Assets	840	924	912	1063	1187
O					
P Current liabilities ⁶					
Q Creditors ⁷	92	96	130	156	174
R Notes+ bills pble ⁸	16	8	7	14	27
S Tax liability	5	40	55	85	138
T Bank overdraft ⁹	130	141	65	105	85
U Other current lia	38	50	41	48	50
V					
W Other debt ¹⁰					
X from Govt	22	28	32	67	83
Y from Bk of Ghana	*	*	*	2	9
Z from Com'l Banks	*	1	2	3	16
a from Dev Banks ¹¹	1	3	8	15	21
b from Abroad	147	158	157	155	150
c					
d Equity					
e Govt cash equity grants	115	131	132	142	139
f Other contributed capital	266	266	265	269	275
g Capital reserve	10	10	17	15	17
h Income surplus	-9	-20	-13	-28	-16
i					
j Other liabilities	9	12	15	14	19
k					
l Total Liabilities	840	924	912	1063	1187

1. Includes construction in progress.

2. Includes hire purchase debtors.

3. Includes Ghana Government debt only.

4. Includes savings deposits, fixed deposits, and special deposits.

5. Includes development expenditure.

6. Excludes current portion of long-term debt which is here included in line W.

7. Includes expense creditors. In certain cases includes "other credit balances."

8. Excludes loans among parastatal enterprises and loans from Government which are here included in line W.

9. Commercial bank only.

10. Includes current portion of long-term debt, loans (of all maturities) among parastatal enterprises, and loans (of all maturities) from Government.

11. Includes National Investment Bank, Agricultural Development Bank, Post Office Savings Bank, Social Security and National Investment Trust.

Table 16.2

22 Ghana State Enterprises—Derivation of Operating Surplus, 1972–75
(millions of cedis)

		<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
A					
B					
C	Net Profit before tax, grants, dividends ¹	-9	18	2	-6
D					
E	Plus: Recurrent Govt grants	2	2	3	8
F					
G	Less: Taxes accrued ¹	3	6	13	7
H					
I	Less: Dividends paid	1	2	2	2
J					
K	Equals: Net Profit after tax, grants, divs	-12	12	-10	-8
L					
M	Plus: Direct adjmts to surplus ²	1	-8	-5	18
N					
O	Plus: Net book write-downs ³	2	-4	4	-24
P					
Q	Plus: Depreciation charge	20	21	24	29
R					
S	Equals: Operating surplus	12	21	13	14

1. Net of tax paid by Cocoa Marketing Board

2. Includes all adjustments necessary to reconcile net profit after taxes, grants, and dividends to the increment in the balance sheet income surplus account. Consists largely of adjustments to prior year revenue or expense.

3. This adjustment removes the effect of write-ups and write-downs on the income surplus accounts. These book entries have also been reversed in the relevant asset or liability account.

Table 16.3

22 Ghana State Enterprises— Sources and Uses of Funds Statement, 1972–75 (millions of cedis)

		<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
A	<u>Uses of Funds</u>				
B					
C	Plant and Equipment	53	34	59	68
D	Δ Inventory	-13	11	57	24
E					
F	Δ Financial Assets				
G	Trade+staff debt	40	-20	32	44
H	Temp. invmts	22	1	1	-3
I	Cash	24	-9	28	5
J					
K	Investments	-29	2	3	2
L					
M	<u>Total Uses</u>	<u>97</u>	<u>19</u>	<u>180</u>	<u>140</u>
N					
O	<u>Sources of Funds</u>				
P					
Q	Operating Surplus	12	21	13	14
R					
S	Δ Financial Liabilities				
T	Trade credit	4	36	26	16
U	Notes and bills pble.	-8	-1	8	13
V	Tax liability	34	14	30	53
W	Bank Overdraft	11	-76	40	-26
X					
Y	Other debt	<u>16</u>	<u>15</u>	<u>41</u>	<u>44</u>
Z	from Govt	7	4	35	19
a	from Bk of Ghana	-	*	2	6
b	from Com'l Banks	1	*	1	14
c	from Dev. Banks	2	5	7	7
d	from Abroad	6	6	-4	-2
e					
f	Govt cash equity grants	16	5	10	20
g					
h	Other sources, net	12	5	12	6
i					
j	<u>Total Sources</u>	<u>97</u>	<u>19</u>	<u>180</u>	<u>140</u>

BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM

Bridging Tables

(1955)

A bridging table reconciles two time series that are from differing statistical systems. The table does this by making a series of data adjustments that transform one series into the related but technically differing time series from another statistical system. The table provides an enumeration of the various conceptual differences between the time series.

In situations where a country's statistical systems have not been fully harmonized, bridging tables have important uses. They can be used in estimating flow-of-funds series, they can be used to translate a projection or forecast from one statistical system to another, and they are useful in discrepancy sleuthing.

The bridging tables that follow were developed by the Federal Reserve before the integration of the flow-of-funds system and the national income and product accounts system. They illustrate an important classification scheme for analyzing technical differences in time series measuring transaction flows.

Excerpted from Board of Governors of the Federal Reserve System, *Flow of Funds in the United States, 1939–1953* (Washington, DC: Board of Governors of the Federal Reserve System, 1955), pp. 78, 80, 148–50, 299–302.

Table 17.1

Consumer Nonfinancial Receipts and Personal Income

(In billions of dollars)

	1939	1947	1948	1949	1950	1951	1952	1953
A. Personal income in national income accounts	72.9	190.5	208.7	206.8	227.0	255.3	271.2	286.1
<i>Adjustments for differences in transaction coverage:¹</i>								
B. Minus: Imputed and in-kind income in wages and salaries and in interest	2.8	5.4	5.9	6.2	6.7	8.0	8.5	9.0
C. Minus: Imputed and in-kind income in proprietors' and rental income	2.5	4.7	5.0	5.2	5.4	5.9	6.3	6.6
D. Plus: Interest on tax refunds	*	*	.1	.1	.1	.1	.1	.1
E. Plus: Receipts from sales of homes, cars, and other goods	2.7	10.0	10.7	12.5	16.1	17.1	21.7	22.0
F. Plus: Benefits from private life insurance ²	2.8	3.2	3.4	3.7	4.0	4.3	4.6	5.0
G. Plus: Benefits netted against nonlife insurance premiums in personal consumption expenditures ³	.3	1.0	1.2	1.4	1.7	2.3	2.7	3.2
<i>Adjustment for differences in timing:</i>								
H. Plus: Net issues of armed forces leave bonds and adjusted service bonds	*	.2	-.3	-.1	-.1	-.2	*	*
<i>Adjustment for differences in consolidation:</i>								
I. Plus: Grants and donations received from nonprofit organizations	-.2	.6	.6	.7	.7	.7	.8	.8
J. Plus: Insurance benefits received from self-admin. pension plans	*	.1	.1	.1	.1	.2	.2	.2
<i>Adjustment for differences in transaction classification:</i>								
K. Minus: Consumer bad debts in personal income	.3	.3	.3	.4	.3	.3	.3	.3
L. Plus: Personal contributions for social insurance deducted in calculation of personal income	.6	2.1	2.2	2.2	2.9	3.4	3.8	4.0
<i>Adjustment for differences in sector coverage:</i>								
M. Minus: Interest, dividends, and transfer payments received by nonconsumers in personal sector of national income accounts ⁴	-.2	.9	.9	.9	1.1	1.2	1.3	1.3
N. Minus: Employer contributions to self-administered pension plans	*	.5	.5	.6	.9	1.2	1.6	1.9
<i>Adjustment for differences in sector allocation:</i>								
O. Minus: Interest receipts of nonfinancial nonfarm noncorporate business	*	.2	.1	.1	.1	.1	.1	.1
P. Minus: Employer contrib. to insured pension plans and insurance programs	.2	.8	.9	1.1	1.4	1.7	1.9	2.3
Q. Minus: Net funds left in and invested in noncorporate businesses by consumer sector	1.0	-3.0	-1.8	-2.6	.1	1.9	-1.8	-.7
R. Plus: Benefits from real property insurance received by nonfarm home owner-occupants	.1	.2	.2	.2	.2	.3	.3	.3
<i>Adjustment to put net items on a gross basis:</i>								
S. Plus: Tax refunds	*	1.7	1.8	2.4	1.7	1.8	2.1	2.6
T. Plus: Personal cash remittances from abroad netted in personal consumption expenditures	*	.1	.1	*	*	*	*	*
U. Equals: Consumer nonfinancial sources of funds in flow-of-funds accounts	72.6	199.8	216.9	218.1	238.6	265.0	289.1	303.4

¹ Government benefit payments under deposit insurance programs are too small to be shown separately but are reflected in line U. ² Less than 50 million dollars.

³ Excluded benefits received from self-administered pension plans, which are entered as line J below

⁴ Benefits from private insurance policies covering automobiles and other personal property and from accident and health and hospitalization policies. Benefits from life insurance, real property insurance, and private pension plans are included in other adjustments to personal income on lines F, R, and J.

⁵ Includes interest, dividend and transfer receipts of nonprofit organizations; interest received by self-admin. pension plans; profits of Military exchanges,

Table 17.2

Consumer Financial Asset Flows and Individuals' Liquid Saving¹

Consumer Financial Asset Flows and Individuals' Liquid Saving ¹									(In billions of dollars)				
	1939	1947	1948	1949	1950	1951	1952	1953					
B. SEC series on individuals' liquid asset holdings ^{2,3}	5.5	13.9	9.9	9.1	12.2	18.9	23.7	22.9					
<i>Adjustment for differences in sector coverage:</i>													
C. Minus: Nonconsumer transactions in currency and deposits, savings and loan shares, U.S. Govt. securities, and corporate securities, and corporate securities included in line B4.....	.5	.3	-1.1	-1	1.3	2.6	1.9	3.0					
<i>Adjustments for differences in transaction coverage:</i>													
D. Minus: Equity in insurance	3.0	7.1	7.3	6.1	5.0	8.3	9.3	8.3					
E. Plus: Deposit claims with life insurance companies	.1	.2	.2	.2	.2	.3	.3	.3					
F. Plus: Credit union shares, customer credit balances at brokers and dealers, and mortgages not recorded in individuals liquid saving	.2	.6	.6	.8	1.1	.7	.8	1.0					
G. Plus: Other ⁵	.*	.2	.*	-1	.1	.*	.1	.*					
<i>Adjustment to put net items on gross basis:</i>													
H. Plus: Bank loans to individuals to acquire securities netted against security purchases in liquid saving	-2	-8	.4	.3	.2	-3	.6	.4					
<i>Adjustments for differences in statistical estimates:</i>													
I. Minus: Difference in estimate of float in currency and deposits	.1	.2	-3	.1	2.3	-2	-5	-2					
J. Minus: Difference in estimate of nonindividual holdings of currency and deposits and securities	-2	.*	.5	.*	.1	.3	.*	.3					
K. Minus: Other ⁶	-2	.*	.*	.*	.1	-1	.*	.4					
L. Equals: Net increase in consumer financial assets in flow-of-funds accounts	2.5	6.8	4.9	4.4	4.9	8.5	14.8	12.9					

* Less than 50 million dollars.

1 With the SEC release covering the fourth quarter of 1954, the form of presentation of this SEC series was changed. The name of the series was changed from total liquid savings to change in net claims. A subtotal excluding equity in government insurance was introduced. Since the release indicates that the changes in presentation are tentative, pending completion of a more general review of savings estimates, the liquid savings terminology has been retained in this report.

2 The SEC series in this table reflect data consistent with the SEC release on volume and composition of individuals' saving, July-September, 1954.

3 Currency and bank deposits, savings and loan shares, equity in insurance, and securities as recorded in SEC series.

4 Transactions of nonfarm noncorporate business and farm business sectors, self-administered pension plans, nonprofit organizations, and credit unions and miscellaneous agricultural credit organizations in the financial institutions n.e.c. subsector.

5 Differences in currency and deposits arising from the inclusion in SEC of individuals' deposits in banks in possessions of the United States and closed banks, which are not included in the flow-of-funds measure; differences in U.S. Government securities because timing adjustment in war years introduced by SEC but not adopted for the flow-of-funds accounts; loans in process from savings and loan associations, not included in SEC but included in flow-of-funds to offset their inclusion in mortgage debt statistics; and trust and deposit assets due from Federal Government not included in SEC.

6 Differences in estimate of foreign bank deposits owned by domestic individuals, partnerships and corporations; an adjustment for lost currency incorporated in the flow-of-funds derivation; and a minor adjustment to include holdings of noninterest bearing State and local government debt that are excluded from SEC.

Table 17.3

Federal Nonfinancial Outlays and Federal Cash Outgo

Relationship of Federal Government Nonfinancial Expenditures in Flow-of-Funds Accounts to Federal Government Cash Operating Outgo in Treasury Accounts
(in billions of dollars for calendar years)

	1939	1947	1948	1949	1950	1951	1952	1953
A Federal cash operating outgo ¹	9.4	30.6	36.9	42.6	42.0	50.0	72.0	76.5
<i>Adjustments for differences in transaction classification:</i>								
B Minus: Subscription payments to International Monetary Fund and International Bank for Reconstruction and Development in cash outgo.....		1.8	.4	.2	-.3	0	0	-.1
C Minus: Net increase in Government holdings of other loans and securities in cash outgo.....		4.2	2.2	1.7	1.1	1.7	2.0	.7
D Minus: Net receipts of Government securities reflected in cash outgo.....	-.3	-.2	-.1	0	0	-.2	-.1	0
E Minus: Financial transactions of trust and deposit funds in cash outgo.....	0	-.5	.7	.6	.2	-.1	-.1	0
F Minus: Other.....	-.1	-.4	0	-.1	-.1	-.1	-.2	0
<i>Adjustment for differences in sector coverage:</i>								
G Minus: Expenditures of District of Columbia ²	.1	.1	.1	.1	.1	.1	.1	.1
<i>Adjustment for differences in consolidation:</i>								
H Plus: Contributions to retirement funds by Federal Government employees.....	0	.2	.3	.3	.4	.4	.4	.4
<i>Adjustment for differences in transaction coverage:</i>								
I Plus: Government expenditures out of counterpart funds not in cash outgo.....			0	.1	.1	.1	0	.1
<i>Adjustments for differences in timing:</i>								
J Plus: Net increase in excess of payables over receivables.....	-.1	-.5	.4	0	.8	.6	-.9	0
K Plus: Excess of interest accruals over interest payments.....	0	.5	.6	.6	.6	.7	.8	.6
L Plus: Excess of issues of interest-free bonds and adjusted service bonds over cash redemptions.....	0	.2	-.3	-.1	-.1	-.2	0	0
M Plus: Other timing differences.....		.1	0	.1	-.1	-.1	0	0
<i>Adjustments to put net items on gross basis:</i>								
N Plus: Nonfinancial receipts of Government corporations and agencies netted against expenditures in cash outgo.....	1.1	5.7	4.4	4.7	4.7	5.1	5.2	5.1
O Plus: Tax refunds netted against tax receipts in cash income.....	.1	2.6	2.3	2.8	2.2	2.1	2.5	3.1
P Equals: Federal Government nonfinancial expenditures in flow-of-funds accounts.....	10.3	41.7	41.4	48.5	49.4	65.4	79.1	85.1

¹Less than 50 million dollars.

²Federal cash operating outgo for 1939 as published in the *Treasury Bulletin* has been adjusted to basis comparable to latest cash operating outgo.

³Also includes small adjustment to add general account transfers to District of Columbia.

⁴Also includes net increase in excess profits tax refund bonds, which is small in years shown but of substantial amount from 1944 through 1946.

NOTE.—Details may not add to totals because of rounding. For description of table, see p. 137.

Table 17.4

Federal Obligations, the Public Debt, and Net Cash Borrowing

Relationship of Federal Obligations in Flow-of-Funds Accounts to Public Debt and Net Cash Borrowing Series in Treasury Accounts

(In billions of dollars for calendar years)

	1947	1948	1949	1950	1951	1952	1953
	Amounts outstanding at year-end						
A Gross direct public debt of U. S. Government:	256.9	252.8	287.1	256.7	259.4	267.4	275.2
B Plus: Fully guaranteed securities issued by U. S. Government corporations and agencies:	1.1	1.1	0	0	0	0	1.1
C Equals: Federal securities (direct and fully guaranteed debt)	257.0	252.9	287.2	256.7	259.3	267.4	275.2
D Minus: Direct and fully guaranteed debt held by U. S. Government agencies and trust funds ¹	34.4	37.3	39.4	39.2	42.3	45.9	48.3
E Equals: Direct and fully guaranteed debt held by public ²	222.6	215.5	247.8	217.5	217.2	221.6	226.9
F Plus: <i>Adjustment for differences in sector coverage:</i> Federal securities held by Postal Savings System, Exchange Stabilization Fund, District of Columbia trust funds, and Fed. home loan banks (from 1951 on)	3.4	3.3	3.2	2.9	3.0	2.9	2.8
G Plus: Debt issued by Federal agencies not guaranteed by U. S. Government ³	7	1.0	8	1.2	8	9	8
H Minus: Currency loans in the public debt	7	0	0	0	0	0	0
I Equals: Federal obligations in flow-of-funds accounts	226.0	219.2	221.2	221.1	220.5	224.9	230.1
Annual increases							
J Federal obligations in flow-of-funds accounts	-6.3	-6.8	2.0	-1	-6	4.4	5.2
K Minus: <i>Adjustment for differences in transaction coverage:</i> Securities not issued for cash	2.0	-1	3	8	6	7	7
L Minus: <i>Adjustments for differences in timing, transaction, and sector coverage:</i>	-3	2	0	1	0	4	-1
M Equals: Federal net cash borrowing	-7.9	-6.9	1.7	-9	-1.2	3.4	4.6
N Memorandum: Federal obligations issued for cash in flow-of-funds accounts ⁴	-8.3	-6.7	1.7	-8	-1.2	3.7	4.5

¹ Less than 50 million dollars.² Excludes fully guaranteed securities held by Treasury.³ As given in table "Ownership of Federal Securities," published in the *Treasury Bulletin*.⁴ As defined in *Federal Reserve Bulletin* presentation "Ownership of U. S. Government Securities, Direct and Fully Guaranteed."⁵ Excludes nonguaranteed securities held by the Treasury.⁶ Equal to line J minus line K.

Note.—Details may not add to totals because of rounding. For description of table, see p. 140.

Table 17.5

Federal Government Purchases of Other Goods and Services

Relationship of Federal Government Expenditures for Other Goods and Services in Flow-of-Funds Accounts to Federal Government Purchases of Goods and Services in National Income Accounts

(In billions of dollars)

	1939	1947	1948	1949	1950	1951	1952	1953
A Federal Government purchases of goods and services in national income accounts.....	5.2	15.8	21.9	25.4	22.1	41.0	54.9	66.1
B Plus: Federal Government sales netted against purchases in line A.....	0	1.3	.5	.4	.3	.4	.4	.4
C Minus: Increase in loans made or guaranteed by Commodity Credit Corporation in line A.....	-2	0	1.3	0	-1.0	-2	0	1.6
D Minus: Acquisitions of silver and minor coin.....	.2	0	0	0	0	0	0	0
E Plus: Gross operating expenditures of Government enterprises and Post Office.....	.9	6.8	5.3	5.3	5.5	6.1	5.9	5.9
F Minus: Cash payrolls, rents, grants and donations, insurance benefits, and interest payments included in lines A and E ¹	4.4	10.1	11.6	14.1	14.7	19.2	21.3	21.1
G Minus: Government contributions as employer to civilian retirement funds ²	0	.2	.2	.2	.2	.2	.2	.1
H Minus: Government contributions to veterans' insurance funds.....	0	.6	.1	.5	.1	.1	.1	.1
I Plus: Net expenditures, Treasury clearing account.....	0	.2	-2	-2	-1	-1	.3	.2
J Plus: Other timing differences ³	0	.7	-3	.1	-1	-1	.3	-3
K Plus: Differences in estimates of net Government payables and subsidy payments.....	.2	-5	.1	.1	.7	0	0	-3
L Plus: Unexplained differences.....	.2	.2	.2	.2	0	-1	.1	-1
M Equals: Federal Government purchases of other goods and services in flow-of-funds accounts.....	2.1	13.5	13.4	15.9	14.3	28.0	38.5	42.9

¹ Less than 50 million dollars.

Line E includes cash payrolls, rent, and cash grants to rest of world paid by general Government. Line F (part of the flow-of-funds account but not the statistical income account for Federal Government) includes cash payroll, rent, grants and donations, insurance benefits, and interest payments to public by Government enterprises. The sum of these items is deducted in line F, since the components appear in other transaction categories in the flow-of-funds sector account.

² Does not include contributions for employees of Government enterprises.³ Beginning 1951, includes small valuation adjustments representing estimates of future renegotiations of current military contracts.

Note.—Details may not add to totals because of rounding. For description of table, see p. 281.

Table 17.6

Rest of the World Purchases from the United States

Relationship of Rest of the World Purchases of Other Goods and Services in Flow-of-Funds Accounts
to Net Foreign Investment in National Income Accounts

(In billions of dollars)

	1939	1947	1948	1949	1950	1951	1952	1953
A Net foreign investment in national income accounts	.9	8.9	2.0	.5	-2.2	.2	-.2	-1.9
Adjustment for difference in transaction coverage:								
B Minus: U. S. net domestic production of gold	.2	*	*	*	1	*	†	*
C Equals: Net nonfinancial uses of funds by rest of the world in flow-of-funds accounts ¹	.7	8.9	2.0	.5	-2.2	.2	-.2	-1.9
Adjustments for differences in transaction classification:								
D Minus: Net investment income paid to United States ²	.3	.9	1.1	1.1	1.2	1.5	1.4	1.5
E Minus: Net cash grants and donations paid to United States ³	-.2	-.5	-2.1	-3.7	-3.2	-2.6	-2.0	-1.8
F Equals: Net purchases of other goods and services by rest of the world in flow-of-funds accounts	.6	8.6	3.0	3.2	-.2	1.4	.4	-1.5
Adjustment to put net item on gross basis:								
G Plus: Gross sales of other goods and services ⁴	3.1	7.7	9.8	9.1	11.5	14.5	15.1	15.8
H Equals: Gross purchases of other goods and services by rest of world in flow-of-funds accounts ⁵	2.7	16.3	12.8	12.3	11.3	15.8	15.5	14.3

¹Less than 50 million dollars.²Domestic production less domestic consumption.³Line a less line A in Table 46, p. 230.⁴Line b less line B in Table 46.⁵Also includes net transactions with United States in insurance premiums and benefits too small to be shown separately.⁶Line G in Table 46.⁷Line g in Table 46.

NOTE.—Details may not add to totals because of rounding. For description of table, see p. 287.

Table 17.7

Private Capital Expenditures, by Type and Sector, 1950¹ (in billions of dollars)

(In billions of dollars)

	Total	Flow-of-funds sectors				
		Consumer	Corporate business	Nonfarm noncorporate	Farm	Other ²
A Nonfarm residential construction ³	12.7	9.2	2.3	1.2	.....	*
B Purchases of completed structures ⁴	11.1	9.2	1.3	.3	.....	*
C Change in value of work put in place on uncompleted projects.....	1.7	.....	.8	.8	.....	.....
D Commercial and industrial plant and equipment ⁵	20.6	.....	16.6	4.1	.....	.....
E Other construction ⁶	3.0	.....	.....	.....	1.6	1.4
F Other capital outlays except real estate ⁷	4.7	.2	.1	.6	3.1	.6
G Total, above capital outlays ⁸	41.1	9.4	19.0	5.9	4.8	2.1
H Land for new construction ⁹	1.4	1.3	.1	*	.....	.....
I Other real estate purchases ¹⁰	12.7	12.6	.....	.....	.....	.2
J Total private capital expenditures in flow-of-funds accounts ¹	55.3	23.2	19.1	5.9	4.8	2.3

¹Less than 50 million dollars.²Other than net investment in inventories.³Banking, insurance, and "other investors" sectors.⁴Lines C plus F minus I in Table 70.⁵Lines E plus F minus I in Table 70.⁶SBC-Commerce series.⁷Lines G plus S in Table 71.⁸Line G in Table 70 plus lines H, L, and T in Table 71.⁹Total in transaction category for other goods and services.¹⁰equipment expenditures in the national income accounts.¹¹Line H in Table 70; lines D and E in Table 63. Noncorporate purchases in line H are reflected in Table 63 as negative components of the sector's net sales of real estate.¹²Lines C and G in Table 63.

NOTE.—Details may not add to totals because of rounding. For description of table, see p. 289.

Table 17.8

Private Capital Formation

Relationship of Private Capital Expenditures in Flow-of-Funds Other Goods and Services Category to Private Construction and Equipment Expenditures in National Income Accounts

(In billions of dollars)

	1939	1947	1948	1949	1950	1951	1952	1953
A Private new construction and equipment expenditures in national income accounts.....	8.9	30.7	37.0	35.3	43.9	46.5	47.0	49.9
B Construction.....	4.8	14.0	17.9	17.5	22.7	23.3	23.7	25.5
C Producers' durable equipment.....	4.2	16.7	19.1	17.8	21.1	23.2	23.3	24.4
D Plus: Brokerage fees and settlement costs.....	*	.1	.2	.1	.2	.2	.2	.2
E Plus: Corporate security flotation cost.....	*	.1	.1	.1	.1	.1	.2	.1
F Plus: Business purchases of used equipment from Federal Government.....		.9						
G Minus: Imputed value of owners' labor on residential construction.....	.1	.3	.4	.4	.6	.6	.6	.6
H Minus: Capital outlays charged to current expense.....	.5	1.4	1.6	1.5	1.9	2.2	2.2	2.2
I Plus: Cost changes during construction ¹	*	.8	.6	-.2	.7	.3	.2	.1
J Plus: Farm equipment purchases: excess of Department of Agriculture estimate over estimate derived from national income accounts.....	.2	.5	.4	.5	.5	.9	.7	.5
K Plus: Plant and equipment expenditures: excess of SEC-Commerce estimate over estimate derived from national income accounts.....	.9	1.8	.9	*	-1.9	-.2	-.1	-.3
L Equals: Private capital expenditures in flow-of-funds other goods and services category ²	9.6	33.2	37.1	33.9	41.1	45.1	45.5	47.7
M Consumer sector.....	1.5	5.1	7.5	6.1	9.4	9.8	10.0	10.7
N Corporate business sector ³	5.1	18.1	19.9	17.5	19.0	22.6	23.4	25.0
O Nonfarm noncorporate business sector.....	1.7	5.5	4.0	4.1	5.9	4.8	4.6	5.1
P Farm business sector.....	.9	3.5	4.3	4.5	4.8	5.6	5.3	4.6
Q Nonprofit organizations subsector.....	.3	.8	1.2	1.6	1.9	2.1	2.0	2.1
R Banking and insurance sectors.....	*	.2	.2	.2	.2	.1	.1	.1

² Less than 50 million dollars.¹ Estimated differences in costs between time of construction and time of sale.³ Other than net investment in inventories and purchases of consumer durables. Includes bank and insurance company expenditures not shown separately.⁴ Differs from line K, Table 70, by amount of land purchases for new housing.⁵ Differs from line N, Table 71, by amount of residential land purchases.

NOTE.—Details may not add to totals because of rounding. For description of table, see p. 294.

INTERNATIONAL MONETARY FUND

**Data Frontiers: Measuring
International Capital Flows***(1992)***Establishment of the Working Party**

The Interim Committee of the Fund's Board of Governors, in its communiqué of September 25, 1989, "encouraged the IMF's Executive Board to continue improving the analytical and empirical framework underlying multilateral surveillance, including the measurement, determinants, and systemic consequences of international capital flows." At a meeting in December 1989, the Executive Board decided that the Fund should undertake a study on the measurement of international capital flows. To this end, it was agreed that a working party of national and international balance of payments experts, drawn from industrial and developing member countries, be constituted under the chairmanship of Baron Jean Godeaux of Belgium. To support the Working Party, a small group of technical experts was organized and attached to the Statistics Department of the Fund. An interim report was submitted to the Managing Director in December 1990.

This final report is presented by the Working Party in accordance with its mandate to investigate the principal sources of discrepancies in the main components of global capital flows and to consider courses of action to be taken by the Fund and national statistical authorities for improving the measurement of these flows over time. This initiative was prompted in large part by the recognition that major discrepancies in reported capital flows introduce a significant element of uncertainty into the conduct of economic policy. These discrepancies, which

Excerpted, with permission, from International Monetary Fund, *Measurement of International Capital Flows* (Washington, DC: International Monetary Fund, 1992), ch. I, Introduction and Summary, pp. 6, 10–14.

Table 18.1

Global Capital Account Discrepancies, 1983–89 (in billions of U.S. dollars; outflows (–))

	1983	1984	1985	1986	1987	1988	1989
Capital account, total	67.4	44.7	53.2	18.0	32.6	45.1	65.8
Direct investment	9.3	4.8	-9.2	-13.6	-24.5	-19.8	-8.2
Portfolio investment	24.0	32.6	43.4	3.6	-0.7	-11.9	32.3
Other capital	36.2	25.8	27.0	32.7	110.5	76.6	45.6
Reserves/LCFAR ¹	-2.0	-18.7	-7.9	-4.7	-52.7	0.2	-3.9
<i>Memoranda:</i>							
Current account	-68.2	-72.4	-72.9	-58.9	-45.5	-52.5	-75.6
Errors and Omissions	0.9	27.8	19.7	41.0	13.0	7.3	9.8

Source: *Balance of Payments Statistics Yearbook*, 1990.

1. Discrepancy between changes in official reserves and liabilities constituting foreign authorities' reserves (LCFAR).

became apparent on a global scale in the 1980s (Table 18.1) and were accompanied by large errors and omissions in national balance of payments statements, arose against the background of dramatically accelerated changes in the environment for international capital flows, as outlined subsequently.¹

International Capital Markets in the 1980s

During the 1980s, international capital markets underwent unprecedented changes that gave rise to significant difficulties for the measurement and recording of capital flows. Most industrialized countries removed existing restrictions on cross-border capital flows; many innovative financial instruments were introduced; and financial markets became increasingly integrated in a global framework. Consequently, cross-border financial flows expanded rapidly and now greatly exceed international trade in goods or services. The main features of this evolution were financial liberalization, innovation, and the changing composition of cross-border financial flows. In this process, private capital flows outpaced official capital flows, and the private flows increasingly were arranged outside the traditional domestic financial intermediaries. Many new market participants became active in international finance.

Findings for Major Capital Flow Categories

The global capital flow discrepancy indicates that recorded capital outflows have been relatively understated. This bias is consistent with the earlier findings of the Working Party on the Statistical Discrepancy in World Current Account Balances as to the major sources of the discrepancy in the measurement of investment income.² In the sections that follow, many specific corrections have been

Table 18.2

Global Capital Account Discrepancies and Adjustments by Major Components, 1986-89 (in billions of U.S. dollars; outflows (-))

	1986	1987	1988	1989	1986-89 average
Capital account, total ¹	18.0	32.6	45.1	65.8	40.4
Adjustments ²	-15.0	-24.2	-13.4	-40.3	-23.4
Adjusted capital account, total	3.0	8.4	31.7	25.5	17.0
Direct investment	-13.6	-24.5	-19.8	-8.2	-16.5
Adjustments	16.9	14.6	6.2	9.5	11.8
Adjusted direct investment	3.3	-9.9	-13.6	1.3	-4.7
Portfolio investment	3.6	-0.7	-11.9	32.3	5.8
Adjustments	3.5	11.9	6.3	7.7	7.4
Adjusted portfolio investment	7.1	11.2	-5.6	40.0	13.2
Other capital	32.7	110.5	76.6	45.6	66.4
Adjustments	-41.8	-102.9	-25.6	-63.9	-58.6
Adjusted other capital	-9.1	7.6	51.0	-18.4	7.8
Reserves/LCFAR	-4.7	-52.7	0.2	-3.9	-15.3
Adjustments	6.4	52.2	-0.2	6.3	16.2
Adjusted reserves/LCFAR	1.7	-0.5	--	2.4	0.9

1. *Balance of Payments Statistics Yearbook*, Part 2, 1990.

2. Adjustments to each discrepancy include relevant corrections to LCFAR as described in Chapter 8.

suggested for transactions as reported by individual countries, and results have been grouped by type of capital flow. Suggested adjustments have been summarized at the global level in Table 18.2.³

Direct Investment

Most of the problems with direct investment statistics have arisen from failure to collect adequate data or from deviations from international standards as established in the *Balance of Payments Manual*. The Working Party found that extensive modifications are indicated for reported capital flows, especially for reinvestment of earnings. The suggested adjustments correct for misclassifications and for missing or inaccurate data in national sources. (Statistical procedures to deal with these problems also are suggested in later chapters.) The Working Party's adjustments have reduced considerably the original pattern of annual net global outflows for direct investments.

The Working Party believes that a crucial factor in improving direct invest-

ment statistics is closer adherence to the requirements of the Fund's *Manual*. In particular, surveys of direct investors and affiliates are needed in order to compile information on "noncash" transactions such as reinvestment of earnings. National compilers also can benefit (as is demonstrated in this report) from using data collected in partner countries when domestic sources are inadequate.

Portfolio Investment

Most of the recent innovations in international financial practices have borne directly on the measurement of transactions in securities. Consequently, the difficulties of capturing data on these transactions in national statistical systems have grown to the point where the validity of some of the available data is increasingly in doubt. Under current practices the possibilities for verifying the accuracy of data on cross-border purchases and sales of securities are quite limited. The main avenue for verification of national data is comparison with independent statistics on new issues and redemptions of securities, together with some detailed data compiled in a few countries. The Working Party has employed figures collected by the BIS on new bond issues and redemptions and on outstanding amounts of bonded debt as major reference points.

Reference to the BIS bond data and consultations with individual countries have turned up a number of cases in which corrections to portfolio flows were indicated. On the basis of this research, a variety of adjustments to recorded data can be recommended to national compilers. The net result of these adjustments, shown in Table 18.2, has been to add net inflows to the *Yearbook*-reported balances in each of the four years under study. These adjustments mainly reflect transfers to the portfolio sector of international bond sales that were recorded by a number of borrowing countries as loans under "other capital." Almost all such adjustments were made to the accounts of the issuers of securities, since the treatment by, and residence of, the purchasers were usually unknown.

Other Capital

Capital flows grouped under the broad heading of "other capital" consist of flows not included in direct investment, portfolio investment, reserves, or liabilities constituting foreign authorities' reserves (LCFAR). In the *Yearbook* accounts, this "other" group is subdivided by major category of resident transactor: (1) official, (2) deposit money banks, and (3) other private nonbanks (including some public agencies). "Other capital" flows include a wide variety of financial activity, ranging from trade credit and deposits with foreign banks to marketable short-term instruments and loans from foreign banks, governments, and nonbank lenders. The private nonbank group includes many types of financial institutions (such as insurance companies, finance companies, and security dealers) that have large cross-border flows. Many countries have tended, moreover, to categorize as

"other" any capital flows that cannot be specifically identified. As mentioned earlier, the sector accounts in "other capital" are not individually "symmetric" across the world, nor do they cover all transactions of the sectors. When consolidated, however, they should balance at the global level, and it is only at that level that balance should be expected.

The main findings of the Working Party in the "other capital" category have resulted from comparisons of IBS data—on a flow basis as calculated by the IMF—with national balance of payments figures on changes in the claims and liabilities of private nonbanks with banks resident in other countries. While many countries have captured the external operations of their banking sector fairly accurately in national balance of payments statistics, most have experienced great difficulty in obtaining reliable data from private nonbanks on their claims on or borrowings from foreign banks. Consequently, the coverage of this activity by many countries is deficient.

Data reported to the BIS and the Fund by banks in the principal financial centers can be used to derive the amounts deposited with them and borrowed from them by residents of individual foreign countries. This information can be compared, in principle, with corresponding data in the balance of payments accounts of countries where the depositors and borrowers reside, although few countries have closely matching data categories. If the derived data clearly show a larger volume of flows (or stocks) vis-à-vis foreign banks than does the national balance of payments accounts, however, it is reasonable to interpret the difference as an indication of the extent to which the balance of payments accounts are deficient.

The statistical adjustment to "other capital" averaged close to $-\$59$ billion over the 1986–89 interval under review and accounted for the bulk of the net reduction in the global imbalance achieved by the Working Party. As shown in Table 18.3, about half this adjustment, close to $-\$30$ billion, was derived from the international banking data. The table also shows that adjustments to recorded capital flows of private nonbanks dominate these results. This was by far the largest single block of missing capital outflows that the Working Party was able to identify. However, comparisons between the balance of payments and IBS data sources must be used with caution. On a global scale the results indicate the general size of omissions, but at the individual country level, national compilers should make a specific evaluation of the quality of their own data and decide whether their accounts could be improved by substituting the IBS/BIS figures. A number of countries have already begun to use these data.

Adjustments for deposit money banks in Table 18.3 bring into the world totals the banking activity in offshore financial centers (OFCs) that is omitted from national balance of payments statements. These amounts are reported directly by the OFCs in the context of the IBS statistics and are therefore net additions to capital flow totals rather than adjustments to existing estimates, as is the case for

Table 18.3

Adjustments to "Other Capital" Indicated by International Banking Statistics, 1986-89¹ (in billions of U.S. dollars; outflows (-))

	1986	1987	1988	1989	1986-89 average
Total adjustments	-21.3	-33.7	-5.6	-57.7	-29.6
<i>By sector</i>					
Private nonbanks	-16.1	-24.7	3.8	-48.7	-21.4
Deposit money banks	-5.2	-9.0	-9.4	-9.0	-8.2
<i>By area</i>					
Offshore financial centers	-11.3	-9.3	-10.8	-3.1	-8.7
Other countries	-10.0	-24.4	5.2	-54.6	-20.9

¹Adjustments for nonbanks are described in Chapter 6. Adjustments for deposit money banks are for offshore financial centers and are described in Chapter 9.

nonbanks. The banking adjustments were part of a broader picture for OFCs that is explained later in this report.

Adjustments to the "other capital" category, apart from those derived from banking data, consist mainly of reclassifications that shift transactions into the portfolio investment and LCFAR categories. An average inflow of about \$10 billion per year has been removed from the resident official sector of "other capital" in the 1986-89 period and shifted into portfolio investment flows. Similar amounts have been shifted from deposit money banks into portfolio investment. Data adjustments for short-term securities also affect this category.

In establishing the terms of reference for the Working Party, the Executive Board called attention to the problem of concealed international capital flows associated with drug money and other illegal activities. The Working Party investigated various aspects of such flows, as well as the effects on reported capital flows of so-called capital flight. Its conclusion was that information available to statistical agencies on such activities was far from sufficient to allow for a separation of such financial dealings from the general run of international financial traffic.

Almost by definition, capital flight has not been registered in the capital-exporting country but often may have been recorded in recipient countries. Thus, this phenomenon may well be a significant contributor to the observed global excess of recorded inflows over outflows. However, estimates of the extent of capital flight have been wide ranging, and they cannot identify countries where the funds were invested. The amount of capital flow associated with drug trafficking is also highly uncertain, but surely is much smaller than commonly cited estimates of the retail value of drug sales in national markets. Moreover, these flows merge indistinguishably with other kinds of poorly recorded outflows.

Reserves and Liabilities Constituting Foreign Authorities' Reserves

In principle, transactions in foreign exchange reserves, as reported by holders, and in LCFAR, as reported by countries where the funds are invested, should balance at the global level, but in practice they do not. As shown in Table 18.1, net increases in reserves (outflows) reported by asset holders generally exceed the LCFAR inflows reported by obligors. The imbalance between these flows has implications for discrepancies in other categories of capital flows. The Working Party investigated the reserves/LCFAR discrepancy primarily from the reserves—or asset—side of the picture. For the purposes of this study, a large number of countries provided detailed information on the types of instruments (such as securities and deposits) in their reserve transactions for the 1986–89 period. This information enabled direct comparisons of reserve movements—by type of instrument—to be made with LCFAR transactions as reported by debtor countries. The same data made it possible to isolate certain sources of error in the LCFAR figures, to correct the reserves/LCFAR imbalance, and to make additional adjustments to the portfolio and other capital accounts.

As part of its reserves-related work, the Working Party also found problems with the recording, by some members of the European Monetary System (EMS), of gold swaps with the European Monetary Cooperation Fund. These problems required adjustments to the reported foreign exchange and gold transactions of several EMS-member countries.

Overall Statistical Results

Adjusted Global and Regional Accounts

The Working Party's statistical results affecting the world capital account can be integrated with adjustments to the current account prepared each year by the Fund on the basis of the 1987 *Report on the World Current Account Discrepancy*. The initial and revised views of world patterns of international transactions are shown in Table 18.4. Comparisons of the reported and adjusted balance of payments accounts of major country groups reveal the following major differences:

1. The large excess of debits in the current account has been nearly eliminated. There was a substantial addition of net credits to developing countries and a smaller addition to industrial countries. The added credits were primarily income on portfolio investment and unrequited transfer receipts.
2. Although a sizable discrepancy remains, the excess of credits in the global capital account (nearly as large as the opposite discrepancy in the current account in 1988 and 1989) has been greatly reduced by the adjustments suggested by the Working Party. The effect of the adjustments has varied on an annual

Table 18.4

Global Balance of Payments Accounts as Reported and Adjusted, 1986-89 ¹ (in billions of U.S. dollars; outflows (-))									
	1986-89				1986-89				
	As reported in 1990 Yearbook				As adjusted				
World ²	1986	1987	1988	1989	1986	1987	1988	1989	average
Current account	-59.0	-45.6	-52.5	-58.2	-27.1	-10.2	0.8	-9.5	-11.5
Capital account	18.0	32.6	45.1	65.8	3.0	8.4	31.8	25.5	17.2
Industrial countries									
Current account	-28.2	-57.8	-52.7	-82.5	-22.2	-50.3	-37.0	-63.7	-43.3
Capital account	-2.4	41.4	41.4	73.6	7.6	32.3	55.6	49.2	36.2
Errors and omissions	30.7	16.8	11.3	8.9	14.6	17.9	-18.6	14.5	7.1
Offshore financial centers ³									
Current account	3.0	2.0	3.8	5.6	5.3	5.2	8.8	12.6	8.0
Capital account	-12.6	-1.7	-2.3	-2.6	-29.2	2.1	-15.7	-11.7	-13.6
Errors and omissions	-9.6	-0.3	-1.5	-3.0	24.0	-7.3	6.9	-1.0	5.7
Other developing countries									
Current account	-37.9	3.7	-9.1	-5.4	-21.0	22.2	14.8	22.0	9.5
Capital account	35.9	1.2	12.2	-0.4	27.0	-18.6	-1.2	-3.6	0.9
Errors and omissions	2.0	-5.0	-3.1	5.8	-6.0	-3.6	-13.6	-18.4	-10.4
International organizations									
Current account	4.1	6.6	5.5	6.7	4.1	6.6	5.5	6.7	5.7
Capital account	-2.8	-8.0	-6.2	-4.8	-2.4	-7.4	-6.9	-8.4	-6.3
Errors and omissions	-1.3	1.5	0.7	-1.9	-1.7	0.8	1.4	1.7	0.6
Unallocated									
Current account					6.8	6.1	8.6	12.9	8.6
Capital account					—	—	—	—	—
Errors and omissions					-6.8	-6.1	-8.6	-12.9	-8.6

1. Current account as adjusted by the Statistics Department, plus adjustments by the Working Party for reinvestment of earnings and for special financial institutions; capital account as adjusted by the Working Party.

2. World totals as shown indicate discrepancies, because in principle these global aggregates should total to zero.

3. The Bahamas, Bermuda, Cayman Islands, Gibraltar, Hong Kong, the Netherlands Antilles, Panama, and Singapore.

basis, but for the entire four-year period there was only a minor change for the industrial countries. For the developing countries (other than OFCs) there was a drop from an average annual net inflow of \$12 billion, as reported, to a much smaller \$1 billion inflow. The adjustments made by the Working Party to create international capital accounts for the OFCs resulted in increased net outflows—from an annual average of about \$5 billion to nearly \$14 billion.

3. Finally, the generally downward shift in the regional errors and omissions reflects the fact that positive adjustments made to the current account were larger than negative adjustments made to the capital account. Nevertheless, they provide an alternative view of the broad economic relationships among some major country groupings and provide a point of departure for further explanations of the measurement problems that remain.

Actions Needed

On the basis of its studies, the Working Party has made a series of recommendations for actions to be taken at the national and international level to improve the data on international capital flows. It believes that implementation of these actions would produce significant gains in the quality of data available to policymakers and the public. The role of the Fund in carrying forward these recommendations will be crucial. Since capital flow adjustments are very heterogeneous and specialized, the Fund will need to coordinate its work with the activities of national compilers. Many of the specific findings of the Working Party (including much country detail not shown in this report) can be used by the Fund in reviewing capital accounts reported by countries in the future.

All countries can benefit from greater accuracy in their international capital accounts, but those whose transactions weigh heavily in the world totals have a special responsibility to improve the quality of their statistics. As Table 18.5 shows—apart from some OFCs for which comparable data are not available—relatively few countries account for the major part of recorded world capital flows. *The Working Party recommends that these leading countries make a particular effort to upgrade and harmonize their capital account statistics.*

Prospects and Costs

Finally, the Working Party is concerned that all the evidence points to a progressive degradation of the quality of data in international capital flows. For example, the recently compiled 1991 *Yearbook* shows a continuation of large global capital account imbalances. In the long run, basic improvements in the data on capital flows can be achieved only when national compilers have the active support of officials responsible for policy decisions. In order to accomplish such improvements, many countries may have to restructure or adapt their compila-

Table 18.5

Countries Ranked by Reported 1986-89 Capital Flows¹ (in billions of U.S. dollars)

Country	Rank	Capital flows	Percent of total	Cumulative percent of total
Japan	1	254.7	26.93	26.93
United States	2	155.2	16.41	43.34
United Kingdom	3	127.7	13.50	56.84
Germany	4	63.7	6.73	63.57
Belgium-Luxembourg	5	57.3	6.06	69.63
France	6	53.9	5.70	75.33
Italy	7	25.3	2.67	78.00
Netherlands	8	25.1	2.65	80.66
Switzerland	9	24.3	2.56	83.22
Canada	10	17.8	1.88	85.10
Australia	11	13.4	1.42	86.52
Sweden	12	11.7	1.24	87.76
Spain	13	10.5	1.11	88.87
Panama	14	6.2	0.65	89.52
Denmark	15	5.8	0.62	90.14
Singapore	16	5.4	0.57	90.71
Finland	17	4.9	0.52	91.22
China, People's Rep.	18	4.8	0.51	91.73
Saudi Arabia	19	4.5	0.47	92.20
Korea	20	4.3	0.45	92.66
Norway	21	4.0	0.43	93.09
Austria	22	3.7	0.40	93.48
Kuwait	23	3.3	0.34	93.82
Mexico	24	3.0	0.32	94.14
Ireland	25	2.9	0.31	94.45
All countries	185	945.8	100.00	100.00

Source: *Balance of Payments Statistics Yearbook*, Part 2, 1990, Table C-13.

¹1986-89 average of absolute values of capital inflows plus capital outflows.

tion procedures. In that connection, the new *Balance of Payments Compilation Guide* prepared by the Fund will be useful.

The Working Party recognizes the need to contain costs and reporting burdens but believes it is possible, especially with modern computing facilities, to enhance the quality of balance of payments data at moderate expense. To a large extent, the costs associated with adapting compilation systems to new scales and forms of capital flows are transitional rather than ongoing. Of course, national compilers will continue to depend to a considerable extent on the willingness and ability of market participants to provide the rather specialized data needed for the preparation of the capital accounts. Certainly, a primary requirement for securing this cooperation is a convincing explanation to data suppliers that these data are essential and that responsible national authorities give a high priority to supporting this statistical work.

Notes

1. The reported balance of payments data used in this report are based on the Fund's *Balance of Payments Statistics Yearbook* (1990), referred to in this report as the *Yearbook*. In addition, references are made to the fourth edition of the Fund's *Balance of Payments Manual*, referred to in this report as the *Manual*.

2. See *Report on the World Current Account Discrepancy* (Washington, DC: International Monetary Fund, 1987).

3. In some cases, estimated amounts of the unrecorded capital outflow can be traced to individual countries, but these attributions are not without challenge. In general the Working Party has opted to aggregate its findings into three regional categories: industrial countries, developing countries, and offshore financial centers.



Part V

Conceptual Design of the Accounts

Introduction to Part V

The conceptual fortunes of the flow-of-funds accounts, like those of the national income and product accounts (NIPA), are now—for better or for worse—tied to the international System of National Accounts (SNA). This was not so when Morris Copeland designed the moneyflow accounts. At that time there was no SNA. And, although Copeland knew the national income accounts at first hand (having helped to design *them*), the accounts that he put together for financial analysis, the moneyflow accounts, were separate and distinct. However, the decision at the Federal Reserve Board to “integrate” the flow-of-funds accounts with the NIPA in the early 1960s and the inclusion of this arrangement in the 1968 SNA sealed the fate of the flow-of-funds accounts in this respect. They were henceforth to be incorporated into the international system of national accounts.

In his *Moneyflows* book Copeland characterized the income and product accounts as viewing the economy from an “accrual and imputation” perspective, a perspective in sharp contrast with his “moneyflows” perspective. Although the two systems could be related, to join them would, he believed, create a mixed bag, a whole whose parts did not articulate. With the “integration” of the flow-of-funds accounts and the NIPA in the early 1960s some system differences were reconciled; others were left untouched and simply ignored. Now, however, the issue of imputations has returned, perhaps to haunt social accountants.

In the mid-1980s, as discussions began about the upcoming SNA revision, various Dutch social accountants made the case for revising the SNA toward a “core” system of accounts. The core was to be a highly institutional set of NIPA restricted to actual market transactions and which were to be recorded in the accounts of the transactors who actually carried them out. Above all, the core was as far as possible to be stripped of imputations, including attributions and transaction reroutings. In reading 19 the excerpts from van Bochove and van Tuinen present the basic Dutch position; the comment by Nancy Ruggles relates that position to nearby viewpoints.

According to the Dutch, the present-day range and variety in the uses of national accounts make any given set of imputations and attributions unsatisfactory. The needed variety in social accounting systems would be better achieved by having a set of core accounts to which any particular analysis could add a

"module," a set of imputations appropriate to its particular purpose. An additional supporting argument relates to the more clear-cut relation of the core accounts to data sources and especially to the ability to relate micro-based compilations to the aggregate measurements. On the other hand, the continuity of the SNA system would be preserved by requiring "system modules," which when combined with the core accounts would yield the current (or revised) SNA.

A core NIPA would have major implications for the treatment of finance in the accounts. The removal of imputations from the NIPA would be a move toward a "moneyflows" system, one in which nonfinancial transactions would be in direct accounting articulation with financial stocks and flows. A core NIPA carries the hope that a complete flow-of-funds/NIPA integration could be carried out, that the unfinished work of the 1960s "integration" could be completed. The next reading permits us to move further into this matter.

Both Richard and Nancy Ruggles over the years have taken positions favoring a NIPA move toward a core or "market transactions" system. A strong motivation for them is the sense that we are now in the midst of a revolution in the technology of data assembly, that aggregations of microdata from many sources are destined to be integrated with the macro accounts. This integration, which will greatly extend the system's range of uses, would be greatly facilitated by the shift to a core NIPA.¹

Their position has been spelled out in a number of important empirical applications, notably in their 1982 presentation of the "Integrated Economic Accounts" for the United States.² This system removed a number of imputations, tightened the integration with the flow-of-funds accounts, and carried the analysis to a full set of balance sheets. The same conceptual changes to the U.S. NIPA are carried out in their analysis of the household sector in reading 20.

This analysis of household saving and capital formation stands on its own merits with its powerful empirical case against our preconceptions of who saves and who acquires real capital. But the transformation of the NIPA personal income and outlay account into the household income, outlays, gross saving, and gross capital formation account in Table 20.1 is of special interest to financial analysts. The resectoring and imputation removals in this transformation are major steps toward the Ruggleses' concept of the core accounts, and the adjustments on this table can guide us to the financial account implications of a NIPA move toward core accounts.

For example, the shift of nonprofit institutions from households to the enterprise sector would not only require the Table 20.1 entries to income and outlays but would also require the shift of nonprofit assets—real and financial—and liabilities from the household to the enterprise balance sheets. Or, the changes in owner-occupied housing would presumably require owner-occupied houses and their associated mortgage debt to be moved from the balance sheet of the imputed housing enterprises to the household sector. And new house purchases by owner occupants would be moved from the enterprise to the household capital

account. (In the U.S. flow-of-funds accounts and balance sheets these changes would be unnecessary because the imputed enterprise balance sheet was never constructed; NIPA and flow-of-funds have been inconsistent in this respect all along.) Or, a third area, adjustments for employer pension funds, would require the removal of pension fund reserves from their present (imputed) position in household financial portfolios. And so on. Perhaps the specification of a NIPA core system might lead to the clean articulation of financial and nonfinancial accounts that has as yet to be achieved. But in the end the SNA revisers rejected such a radical change in the SNA.

In a remarkable 1987 *tour de force* Nancy Ruggles raised a broad range of financial account issues to be faced by the SNA revision and carried their analysis through to the balance sheet impacts. She reports that a number of these problems surfaced when the U.N.'s *Provisional Balance Sheet Guidelines* of 1977 began to be implemented. For example, the reconciliation framework needed expansion to be able to accommodate the many balance sheet changes found that were not due either to transaction flows or price changes. Other sources of problems were the differences between SNA financial treatments and those found in other data systems, particularly the international systems guided by the IMF such as balance of payments and government finance statistics. These later became the revision area called *harmonization*, which received considerable attention. And finally we once again find the sorts of conceptual issues noted above where the financial account/nonfinancial account articulation remains deficient. An article ranging over this variety of technical problems is not an easy one to digest, but it remains a key basic reference.

The next selection is in marked contrast to the preceding. It approaches the accounts from the viewpoint of financial analysis itself. It wants to know if the SNA contains a flow-of-funds matrix that is effective for a policy understanding of the operation of the financial system. It also approaches the accounts from the viewpoint of the developing countries for whom *simplicity* is a special virtue. The analysis finds that a generally suitable matrix was incorporated into the 1968 SNA. Financial institutions were separately sectorized, and sector capital finance accounts were created, accounts presenting the incurrence of particular liabilities and the acquisition of particular financial assets for each of the main sectors. My primary criticism relates to the analytically unsuitable classification of financial instruments. This needs to be simpler, and to make far greater use of what may be called "sector-oriented transaction types" to facilitate to-whom/from-whom financial flow tracing.³

Finally, the new 1993 SNA⁴ itself, as represented by reading 23. SNA 1993 is large (700 pages) and comprehensive, so reading 23 is a tiny sample. The aim in selecting it was to present what is called the main "sequence of accounts" and to show how the financial accounts fit into it. In my view the heart of the system is most clearly presented in Table 2.8, called the Integrated Economic Accounts, and reproduced here as Table 23.1. The description of the financial account

itself is concentrated in chapter XI, and Tables 11.1 and 11.2 from that chapter (reproduced here as Tables 23.2 and 23.3, respectively) analyze the financial account from the earlier table and lay out the scheme of financial transactions. These selections make no pretense of covering the many technical discussions relating to finance in the work, many of which are discussed in other chapters on the capital account, the other changes in assets account, and the balance sheet.

In the new SNA finance has been given a new importance. Table 23.1 shows financial corporations as a separate institutional sector column throughout. And the capital and financial accounts are shown to articulate with the "distribution and use of income" accounts above and the new balance sheets below. In addition the new system contains much added detail in regard to these accumulation accounts. Best of all, as chapter XI makes clear, financial analysis is being given a legitimate place among the uses of the SNA.

I make no attempt here to evaluate the new system as a whole. For an extensive examination the reader is referred to the new volume edited by John Kendrick.⁵ With respect to finance, however, I will note that the financial transaction classification (Table 23.3) was not changed as I had hoped. And I repeat my sense that the maintenance of some traditional treatments—such as owner-occupied housing and pension funds—suggests that much financial/nonfinancial articulation of a technical sort remains to be done.

The final selection in this Part, reading 24, deals with the reconciliation of measures of international debt stocks and flows. This area also is an exercise in harmonization because several different international organizations (the Bank for International Settlements, International Monetary Fund, Organization for Economic Co-operation and Development, The World Bank) each compile related and overlapping data. In addition to these complexities, this area encompasses a great many unusual debt stock changes such as debt cancellation, debt restructuring, debt rescheduling, and so on. For those of us used to thinking of a balance sheet increment as a transaction flow, this excerpt from *Debt Stocks, Debt Flows, and the Balance of Payments* provides an education.

Notes

1. See Richard Ruggles, "The United Nations System of National Accounts (SNA) and the Integration of Macro and Micro Data" in John W. Kendrick, ed., *The New System of National Accounts* (Dordrecht: Kluwer, 1996).

2. Richard Ruggles and Nancy D. Ruggles, "Integrated Economic Accounts for the United States, 1947–1980," in U.S. Department of Commerce, *Survey of Current Business* 62, no. 5 (May 1982).

3. See my comments in Kendrick, ed., *The New System of National Accounts*.

4. Inter-Secretariat Working Group on National Accounts, *System of National Accounts 1993* (Brussels, New York, Paris, Washington, DC: Commission of the European Communities, International Monetary Fund, Organization for Economic Co-operation and Development, United Nations, The World Bank, 1993).

5. Kendrick, ed., *The New System of National Accounts*.

C.A. VAN BOCHOVE AND H.K. VAN TUINEN
WITH COMMENT BY NANCY D. RUGGLES

The Case for Core Accounts

(1986)

Introduction

The present paper argues that the 1993 revision of the SNA must be based on a reconsideration of the structure of the SNA: The changing and growing demands on national accounts necessitate a reconstruction of the SNA. To substantiate this view we reexamine the essential purposes of national accounting and the SNA and conclude that the purposes of the SNA may frequently be in conflict with one another. This is borne out by an examination of proposals for changes in the SNA that have been put forward in the course of the revision process. Many of these proposals mold the system to tally with one of its purposes to the detriment of another one. We conclude that an alternative structure of the system is necessary in order to achieve greater flexibility. This structure is that of a general purpose core with special purpose modules.

Purposes of National Accounts

National accounts are intended to provide a systematic and complete picture of economic activity, meaningful and suitable for economic analysis, forecasting, and policy. These three purposes alone may call for widely different approaches to national accounting. But in addition, neither economic analysis, nor forecasting, nor policy needs are homogeneous. There are many different schools in economic theory, many different forecasting techniques, and a host of policy issues, each with its own data requirements. Moreover, these constantly change

Excerpted, with permission, from C.A. van Bochove and H.K. van Tuinen, "Flexibility in the Next SNA: The Case for an Institutional Core," and Nancy D. Ruggles, "Comment," *The Review of Income and Wealth* 32, no. 2 (June 1986): 127–31, excerpts from 138–52 and 213–16.

and vary from country to country. This multifariousness of purposes and within purposes puts stress on the systems of national accounts in three essential ways.

First, it renders the boundaries of the systems open to debate: Which transactors and transactions should be covered by the accounts? Consider one of the major examples of boundaries: the production boundary. A monetarist would prefer a national product concept to be confined to production traded for money in the market. Development economists take a wider view, whereas representatives of the new home economics and related schools need a still more comprehensive coverage.

Second, the levels of aggregation upon which the systems focus depend on prevailing views of economic theory and aims of public policy. The roots of the system are macro-economic—the seventeenth century originators of national accounting primarily aimed to measure national income, and this macro-economic focus was reinforced by the Keynesian influence of the 1930s. Next, however, the need for more detailed planning of production caused the input-output tables to be added to the system. Meanwhile, the ever greater involvement of public policy with detailed aspects of the economy increased the demand for detailed data; the resurgence of neoclassical and other types of micro-economic and meso-economic general equilibrium analysis reinforced this demand for detail. Of course, to some extent this demand can be met by straightforward disaggregation. This might be dubbed the top-down method. However, frequently the emphasis of the analysis is on the interrelations below the macro-level or on partial study of micro- and intermediate variables; aggregating the variables involved to macro-levels, the bottom-up method, may well yield different aggregates from the traditional ones. Anyone who has ever inspected a Social Accounting Matrix for a developing country or the data base for a general equilibrium tax model of a developed country will realize that there is a tension between them and the straightforward disaggregation of, for example, the SNA's accounts of the nation.

The *third* and most important consequence of the multiplicity of purposes and views underlying systems of national accounts is that the structure of the systems is debatable. Essentially, this structure consists of rules for grouping and classifying transactors and transactions. Classification then amounts to minimizing within group and maximizing between group differences with respect to the relevant characteristics. Consequently, the central issue is the choice of the relevant characteristics. There are two basic approaches to this: the institutional and the functional one. Though the differences between these approaches have not been spelled out too explicitly in the literature, the distinction is a useful one.

We employ the term "institutional" when we want to stress formal and organizational features of transactors and, to a lesser extent, transactions. Thus an institutional definition of transactors emphasizes the units that make decisions, an institutional definition of transactions the formal appearance of these transac-

tions. As a consequence institutional definitions and classifications remain close to the actual experience of the economic agents.

The functional approach, in contrast, is analytic: It starts out with an analysis of the function of transactions. It looks behind their formal appearance to determine their "true" nature. In fact, it frequently concentrates on "processes," "products" and similar categories rather than on transactions. Consequently, transactions that are quite different in formal appearance may be lumped together and vice versa. Transactors are, in the functional approach, defined (if at all) in an indirect way, *viz.* as the performers of functions. They do not have to correspond to directly observable persons or institutions. Clearly, functional definitions and classifications reflect the views and judgments of the designer of the statistical system rather than those of the economic agents.

The 1968 SNA is an institutional system containing a number of functional elements; transactions that are quite different from an institutional point of view are lumped together for functional reasons. Usually this is achieved by registering them *as though* they were similar. Thus their grouping and classification can only be achieved by adopting one institutional model as the standard model, molding all transactions with the same function into the shape of the selected standard model. The SNA accomplishes this by means of "imputations" and "attributions."

An example will clarify this. There are two ways of producing housing services: house owning for own use, and renting. Since, from a particular functional point of view, both these institutional forms may be thought to serve the same true function, the SNA lumps them together as though only letting/renting occurred. This is done by introducing an imputation for owner-occupied dwellings; to this end households in their role as owners of dwellings are viewed as a part of an industry; the Dutch national accounts, e.g., contain an industry called "ownership of dwellings." This example illustrates several points:

- not only is the structure of the system affected, but the production boundary as well;
- the adoption of a treatment geared to one purpose may hurt other purposes: if one wants to analyze the effects of a 10 percent rise in rents on the purchases of consumer goods, the imputation for owner-occupied dwellings must be removed first;
- introducing imputations and attributions damages the ease of interpretation and clarity of the data: frequently users ask for data on the enterprise sector net of owner-occupied dwellings.

The conclusion of this discussion of the purposes of national accounting is that there are so many conflicting purposes and views underlying the accounts that it would be a miracle if one single set of accounts could serve them all. This

situation is exacerbated by the fact that the SNA, as an international guideline, has a number of additional purposes of its own.

Purposes of the SNA

International Comparability

The first main purpose of the SNA as an international guideline is to achieve *international* comparability of national accounting data. This purpose implies that the SNA may differ from the most desirable national systems of individual countries, since the latter are geared to the countries' own institutional setting, economic conditions and policy traditions.

In addition, however, the purpose of international comparability as such may give rise to conflicting alternative options, the basic question being what international comparability *is*. Societies and national economies differ in many ways: levels of output of industries, prices, tastes, institutional arrangements, and so on. Inevitably, these differences in many dimensions pose a considerable number of conceptual and practical problems if one wishes to compare two economies. Thus, if one wishes to compare the volume of output, industry by industry, the data should be cleared of differences in institutional arrangements. If, on the other hand, differences in economic behavior are to be compared, institutional arrangements are of the essence.

Just as in the shaping of the structure of national accounts discussed above, two alternative approaches to international comparability can be adopted: the institutional and the functional. The first would record transactions as they actually occur for the transactors that carry them out; the second employs a host of imputations and attributions to construct "institution-free" data on abstract flows and stocks. Both approaches have their own merits and demerits, depending on the purpose of the comparison. Thus a necessary preamble to any discussion of international comparability would be a discussion of the purposes of the comparison and the points of view these imply. Peculiarly, the 1968 SNA does not contain any such discussion. Nor has an explicit, well-reasoned consensus been achieved since. However, inspection of imputations and attributions prescribed by the 1968 SNA, as well as of a number of proposals to enhance international comparability, reveals that the point of view adopted is, by and large, the functional one. The focus appears to be on the comparison of activities, i.e. "real" flows, whereas institutional differences are abstracted from. As noted above, this choice implies that for each group of abstractly defined transactions a standard institutional model has to be adopted. Internationally, however, the range of different institutional frameworks for the same abstract "transaction" is wider than in a single national economy. Thus the international dimension exacerbates the problems already inherent in the functional approach to national accounting.

Handbook of National Accounting

The second major purpose of the SNA is to serve as a *handbook of national accounting*: "The new system . . . is designed to provide international guidance to national statistical authorities who wish to improve, elaborate and extend their national accounts and their system of basic statistics" (1968 SNA, p. iii). This purpose, too, may conflict with other purposes. Clearly, one internationally uniform handbook cannot be easily applied indiscriminately to diverse national situations. Sophisticated constructions that are essential for one country may be unnecessary and too burdensome for others.

Framework for Other International Guidelines

The third major purpose of the SNA arises from the special character of national accounts as the integrating framework for specialized statistics: The SNA is to serve as *framework for other international economic-statistical guidelines and standards*. Important examples of the latter are the IMF's Balance of Payments and Government Finance Statistics, the UN's Income Distribution Statistics, ILO's Labor Statistics, and so on. The purposes of the specialized system frequently conflict with those of the SNA. Since the latter aims to provide a comprehensive picture of the national economy, the most adequate description of one sector or group of transactions is often sacrificed to the demand of system-wide consistency. In this case, too, the more functional the bent of the accounts, the more difficult the linkage with specialized systems frequently is; a more institutional approach often remains closer to the specialized system. This, however, need not be a law of the Medes and Persians; occasionally, specialized guidelines, like those of the IMF, contain strongly functional elements and prescribe imputations and attributions that are useful for their own subject but would be detrimental if employed in a comprehensive system like the SNA.

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An Alternative Approach: Core and Modules

The discussion above leads to the conclusion that a basic change in the approach to designing systems of national accounts is called for. We should not attempt to construct, in a single monolithic framework, the "true" or "best" all-purpose description of national economies, simply because there *is* no "true" and no "best" description. Instead, there are various alternative descriptions, each useful for its own purpose, each "best" and "true" from its own underlying theoretical point of view.

The implication for the SNA is that it should, instead of trying to provide *the* comprehensive framework for the statistical description of economic systems, be comprehensive in the sense of facilitating the construction of all the alternative descriptions that are relevant for science, policy, and business, both now and in

the future. The best way to achieve this is by means of a systems structure that consists of, on the one hand, a *core* and on the other, a range of *modules*.

The core is a multi-purpose system describing the economy as a whole in an integrated and systematic fashion. The core describes the most restricted part of the economy for which it is still possible to establish all interrelations specified in advanced systems of social accounting; thus it is a canonical national accounting system. Its concepts are as close as possible to those of the economic agents themselves and hence, too, to those of the respondents to the surveys on which its accounts and tables are based. As a consequence, the core is the system with the *maximum institutional content*. It is, in this sense, merely the logical next step in the evolution of the SNA, since conceptually a major difference between the 1968 SNA and the 1953 SNA was the increased institutional content.

In another respect, too, the core is simply the logical next step in the evolution of the SNA. The 1953 SNA was essentially a macro-economic system; the 1968 SNA took a giant stride in the direction of a meso-economic system by the inclusion of input-output tables. The core continues this process by adding disaggregated linkages between the institutional sectors' accounts and input-output tables and by a further subsectoring of the institutional sectors.

The choice of the production boundary in the core implies that the core is restricted to flows which are directly connected with *market transactions*. A further implication is a fairly strict application of the "*transactor-transaction principle*." This principle could be described as the rule that transactions have to be recorded at the transactors who pay or receive the money involved in the transactions. These two properties of the core together imply that the core provides, basically, a description of the *monetary* part of the economic process. The tables and accounts of the core are, therefore, optimally suited for monetary analysis. This choice does not imply that we consider monetary or monetarist analysis the most important approach to economic analysis, nor that we consider the monetary part of the economy to be the most important. Rather, the monetary part of the economy is the minimum part in which virtually all users are interested.

The *core* is the economic statistician's exercise in restraint. Wherever possible, the conceptions and perceptions of transactors have been accepted as they are and the transactions described as they appear; the temptations of superimposing the economic statistician's own views have been resisted. The *modules*, in contrast, are the analysts' backyard. Here alternative economic theories, national accountants' own views, and purposes of special analysis may be drawn upon to obtain analytic descriptions of the economy or parts of it. Thus, whereas the core has maximum *institutional* content, modules transform the core data to *functional* systems.

The core is a complete, consistent, integrated system, just like the present SNA. However, unlike the present SNA, it is not an attempt to meet *all* demands on national accounting. Instead, the core opts for a number of clear-cut choices, e.g., with respect to the production boundary, consumption by the payee, and so

on. Consequently, the core as such is insufficient to satisfy all major purposes of national accounts. This, in turn, implies that some of the modules are not optional: a number of modules should be a standard part of the system of national accounts, in addition to the core.

There are two groups of mandatory modules. The *first* one consists of statistics on specialized fields which are to be habitually reported to world-wide international agencies. Thus the FAO statistics, IMF's Balance of Payments and Government Finance Statistics, ILO's Labor Statistics are mandatory modules of this type. The *second* group of mandatory modules is of a different kind. The core does not include a number of functional elements of the present SNA and some important proposals for new functional elements, because including them would contaminate the institutional nature of the core. However, these elements are so important for a number of purposes, e.g., continuity with the present SNA, that they should be included in the next "blue book" describing the SNA. Following the French convention, the latter might be called the "Central System." Thus the Central System of the next SNA should consist of both the core and two standard modules. The central system obtained thus is fully equivalent to the present SNA.

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Comment by Nancy D. Ruggles

These three papers¹ on the structure of the SNA are important contributions, but in the space available I can only touch on their high points. That is unfortunate, because they deal with the central problems which face national accountants, and they deserve careful consideration.

The three papers are very different, and at first glance they would appear to be irreconcilable. But on closer examination, common elements do appear. What I propose to do, briefly, is to identify what appears to be common to all three, and then to try to contrast their opposing views of the structure of the system.

Common Elements

1. All of the papers emphasize the need for coherence, completeness, comprehensiveness, and integration—in other words, the commonly understood virtues of any national accounting system.

2. In terms of accounts, all assume coverage corresponding to the flow accounts of the 1968 SNA—that is, as a minimum, production, income and outlay, capital formation, and capital finance accounts. Vanoli would add balance sheets to the minimum list.

3. All assume sectoring as in the 1968 SNA, with a few minor adjustments in some cases.

4. All recognize the need to make some provision for supplementary information or alternative classifications.

So far, there are no surprises. All of these conditions are met by the present SNA, and if there were no other considerations there would have been no need for these papers. But there are other considerations, and on two of them there is still agreement among the papers.

5. In the first place, all three papers agree to some extent on the desirability of showing market transactions separately from imputations and attributions. They do not altogether agree on what market transactions are, and they certainly do not agree on the form of presentation, but they do agree on the need. The Lützel paper focuses entirely on this point. Its concept of market transactions adds some capital items and grosses up intra-sectoral flows. The Dutch paper defines the core of the system in terms of market transactions and makes this a central feature. Although the Vanoli paper is less explicit about what market transactions are, it takes the position that the present SNA does not preclude the presentation of market GDP, and that indeed the enlarged French accounts provide this information. On the other hand, the Vanoli paper rejects the systematic separation of market and nonmarket flows in the central system, on the ground that this would overburden the system.

6. In the second place, all three papers express concern about the relation between the macro accounts and corresponding microdata. The Lützel paper offers this as a principal justification for establishing market accounts, and in particular for its specific recommendations on grossing up the intra-sectoral flows. The Dutch paper grounds its espousal of the transactor/transaction approach on the need for analytic coherence of macro and microdata. Both of these papers reflect a certain optimism about the possibilities for achieving analytically useful links between the macro accounts and the underlying microdata. The Vanoli paper, on the other hand, is more pessimistic—but the pessimism leads to a solution that is not altogether incompatible with those proposed by the Lützel and Dutch papers. The paper argues that construction of the existing macro accounts by aggregation of microdata is both conceptually and practically infeasible—and it therefore proposes “intermediate accounts,” which are tabulations of the actual microdata collected, and in fact are not unlike what most statistical offices now generate from census and survey data. The Vanoli intermediate accounts, the Lützel market accounts, and the Dutch core really are kissing cousins, even though it may not seem that way to the authors concerned.

It seems to me, therefore, that there is no great disparity among the three papers in the actual information content of the macro systems they are proposing. The differences are matters of detail that probably could be worked out by further discussion.

Contrasting Structure

The big difference among the papers lies in their conception of the structure of the system.

The Vanoli paper is an exceptionally clear and lucid description of the present and projected French system, which it presents as a solution to most of the problems now facing national accountants. However, the presentation seems to be based upon two fundamental premises, with which it is possible to disagree.

The first premise is that the present SNA (or ESA) is and will remain the center of the system. With the exception of some variant of the Pêtre proposals on health care and related topics, no alterations in the system are contemplated. New information, where it is considered to be desirable, should be added in the form of supplementary tables or satellite accounts.

The second premise, which is implicit though not stated explicitly, is that not only the macro accounting system but also the general approach to data collection, processing, dissemination, and analysis will continue to be that which underlies the 1968 SNA, or essentially that of the 1950s or early 1960s. (It is this premise, I suspect, that accounts for much of the paper's pessimism about the usefulness of microdata. The pessimism was justified in 1955, but it really isn't in 1985, as developments in several countries demonstrate.)

The Lützel paper is not concerned with the overall structure of the national accounts, but takes it for granted that the present SNA should remain the center of the system. It envisages the proposed market accounts as supplementary to the main system, derived by both deleting information from the main accounts and adding information to them. In part, the adjustments proposed are specific to the Federal Republic of Germany, reflecting ways in which the German accounts now differ from SNA, and in part they reflect the definition of market transactions adopted, which includes some capital items and intra-sectoral flows.

The Dutch paper, like the French, also proposes a core with supplements, but its core is much more narrowly construed, consisting of actual transactions carried out by institutional transactors, without imputations or attributions. The paper argues that this stripped down version of the SNA accounts, being simpler and more basic, can be expected to continue without changes over long periods so that revisions every fifteen or twenty years will not be required. Supplements to this core—which the paper calls modules—present additional information or alternative formulations and attributions. Some of these modules would be generally desirable, and might for international reporting purposes be considered mandatory. Others might vary according to individual country circumstances.

Three points, I think, need to be made about this formulation. In the first place, a number of the modules proposed in the Dutch paper are very similar, it seems to me, to the French satellite accounts. Second, the Dutch core is very similar to Vanoli's and Lützel's market transactions. And finally, the abandonment of the present SNA is not necessarily implied in the Dutch proposal; two modules, which might be made mandatory for international reporting, could contain the imputations and attributions required to bring the core up to the present content of the SNA. These modules would be similar to Lützel's reconciliation between his market account and SNA, and a similar reconciliation is

implicit between the French intermediate accounts and SNA. The Dutch paper points out that "The central system obtained thus as a combination of the core and two standard modules is fully equivalent to the present SNA. . . ."

The difference among the papers lies in their conception of the basic system. Both the Vanoli and Lützel papers view the system as a framework for macro-economic analysis, and consider that the present SNA meets this need. Other uses, while important, are subsidiary and should not influence the structure of the central system. The Dutch paper, on the other hand, views the accounts as a tool for integrating macro and micro analysis, and considers that the framework must take the needs of both into account. Whereas this entails no necessary difference in the information content of the ultimate macro accounts, it does make a very big difference in the flexibility of the macro accounts and their relation to other data, and in what the accounts can be used for.

The principles and definitions underlying SNA have helped many countries develop macro economic accounts, and have served as the basis for the reporting systems of both the UN and Eurostat. It seems only reasonable to both Vanoli and Lützel, therefore, that the proper strategy should be to build on this success by insisting that the center of the system should be the present SNA, and that any additional needs should be met through various forms of supplementary information—intermediate accounts, parallel accounts, satellite accounts, reconciliation tables—rather than by making any alterations in the macro accounting system itself.

But this approach cannot adequately address current analytic and policy concerns, which are no longer exclusively macro-economic, nor can it make efficient use of the richness of the new sources of microdata that are becoming available. Questions are being asked about distributions of income (and well-being) as well as about the aggregates that appear in the macro accounts, and about the effectiveness of policies designed to have an effect upon such distributions. There is increased interest in the impact upon the functioning of the system of institutional changes—changes in the laws and regulations within which the economy operates—and changes in the composition of the population. To the extent that the SNA macro accounts abstract from institutional realities, they are not an effective tool for such analyses. And although additional subsectoring, intermediate accounts, satellite accounts, and supplementary tables can furnish some of the needed additional information about distributive questions, they do not provide the type of data needed for micro-analytic modeling and simulation. In a number of countries, governments and research organizations are now engaged in carrying out studies of this kind on such topics as the distributional impacts of the tax system or government expenditure programs. The availability of microdata bases for both households and enterprises is increasing rapidly, but the possibility of linking these microdata bases to the macro accounts is still quite limited. The Dutch paper, with its core consisting of simple aggregation of the micro transactor accounts, provides the

basis for such an integration, while at the same time encompassing the content of the existing SNA.

Note

1. C.A. van Bochove and H.K. van Tuinen, "Flexibility in the Next SNA: The Case for an Institutional Core"; André Vanoli, "Sur la structure général du SCN, à partir de l'expérience du système élargi de compatibilité national français"; and Heinrich Lützel, "Market Transactions in the National Accounts," all in *The Review of Income and Wealth* (June 1986).

NANCY D. RUGGLES AND RICHARD RUGGLES

A Market Transactions View of U.S. Households

(1992)

This paper is concerned with investigating the empirical evidence on the saving and capital formation of the household sector and various enterprise sectors in the United States. In brief, where does saving arise, and where is it used? Do some sectors save more than they spend for capital formation, and other sectors less? Have the patterns differed over time? Finally, are the empirical findings consistent with macro saving and investment theory?

The evidence presented indicates that in the United States the household sector has not been a net provider of saving for enterprise gross capital formation. The gross saving of households, correctly measured, has been just sufficient to cover their own gross capital formation. Among the enterprise sectors, the gross saving of the manufacturing sector has been equal to its gross capital formation. The gross saving of public utilities, however, has fallen considerably short of their capital formation. Among financial institutions, employers' pension funds have accumulated substantial reserves against future benefit payments.

The paper is organized as follows. The first part examines the available historical evidence. Initially, there is a brief critique and re-examination of the empirical evidence on household saving, capital formation and net lending since 1947. A review is then presented of the evidence on the saving and capital formation of various enterprise sectors available in a series of National Bureau of Economic Research studies on capital financing and in the Federal Reserve Board data on the flow-of-funds. In the second part, evidence is presented on saving

Excerpted, with permission, from Nancy D. Ruggles and Richard Ruggles, "Household and Enterprise Saving and Capital Formation in the United States: A Market Transactions View," *The Review of Income and Wealth* 38, no. 2 (June 1992): 119-27.

and capital formation of enterprises in major industry groups based on tax return data of U.S. corporations for the year 1983. The third part is a summary and conclusion.

[Only the sections on household saving, capital formation, and net lending since 1947 are presented here.—Ed.]

A. The Theory and Measurement of Saving

1. Theoretical Approaches

Saving and investment occupy center stage in most analyses of the behavior of economic systems. Neo-classical theory focuses on how the real resources made available by saving increase the stock of capital goods required for economic growth. In the Keynesian theory of income and employment, it is the propensity to consume and the marginal efficiency of capital that drive the system. For monetarists, it is how changes in the money supply affect the saving and investment behavior of consumers and producers. Despite their differences in emphasis, most saving and investment theories view the process of saving and investment in functional terms. They deal with consumers, who decide how much to consume and save, and producers, who decide how much to produce and invest. Consumers do not engage in either production or capital formation, and producers do not consume or save. Financial intermediaries provide the markets in which the saving of consumers is made available to producers for their capital formation.

In this framework, theories of consumer saving behavior play a central role. The permanent income hypothesis and the life-cycle hypothesis, which are often advanced in this context, illustrate this functional approach. The permanent income hypothesis attempts to explain the fluctuations in consumer saving. It postulates that consumers will choose a level of consumption that is consistent with their expected permanent incomes (i.e., long-run) and their desired equilibrium levels of saving. As a consequence, it is argued that transitory changes in income will cause saving to fluctuate rather than consumption.

The life-cycle hypothesis focuses on the distribution of saving over an individual's life cycle. It postulates that an individual will save for old age during the productive years, and will draw down accumulated savings after retirement. The national saving rate would thus be strongly influenced by the age distribution of the population. In an economy where the number of individuals in the working cohorts greatly exceeds the number in retirement, substantial net saving would be available to permit growth. Conversely, a population in which the retired cohorts were dominant would yield little or no net saving. By focusing on the behavior of consumers, both of these hypotheses generalize about the nature of saving in the economy as a whole.

The emphasis of theorists on the role of consumer saving has been matched by the concern of economic policy with the level of personal saving. Personal saving is considered vital so that enterprises can undertake the capital formation

required for increased productivity, international competitiveness and economic growth. As an example, one of the major objectives of the 1982 tax reform in the United States was to stimulate personal saving—which was expected to result in increased investment expenditures.

2. Measurement Problems

National accountants in their turn have devoted much attention to the measurement of saving. Despite their efforts the empirical measurement of personal saving is quite unsatisfactory either for testing the various hypotheses about saving or for describing what is taking place in the economy. To a major degree, the problems can be traced to the fact that the functional approach to the analysis of saving and investment deliberately abstracts from the institutional realities that shape both the saving and investment process and its measurement. The institutional units that exist in the economy and for which statistics can be collected are not consumers and producers, but households and enterprises. The institutional units differ from the functional ones in important ways. Households not only consume and save; they also invest, in houses and durable goods. Enterprises not only invest; they also save, in the form of capital consumption allowances and retained earnings. It is not surprising that functional theories of saving and investment that omit both household investment and enterprise saving fail to explain reality, and lead to serious misjudgments in economic policy.

In the national income accounts of the United States, the item labeled "personal saving" does not correspond either to household gross saving, or the net saving or the net lending of households for four reasons. (1) The income and outlays of nonprofit institutions are consolidated with households in the personal income sector. (2) Home ownership is treated as a fictional enterprise providing housing services to consumer-occupants; this fiction seriously distorts and obscures the actual transactions and saving of households. (3) Employer contributions paid to pension funds and the earnings of pension funds are treated as being paid out to individuals, whereas the actual pension payments made to retired persons are omitted. Finally, (4) purchases by households of new owner-occupied housing and consumer durables are not recognized as household capital formation.

The consolidation of nonprofit institutions with households is clearly inappropriate for a statistical analysis of the behavior of households. Private educational institutions, hospitals, churches and other nonprofit institutions are, in fact, enterprises not unlike government enterprises, and their income, current outlays and expenditures for capital formation should be analyzed separately from those of households. Furthermore, consolidation of nonprofit institutions with households means that households' contributions to nonprofit institutions do not appear as outlays by households.

With respect to the imputation for the services of owner-occupied housing, the U.S. estimate of consumer expenditures of home owners includes an imputed

expenditure for space rental to a fictional enterprise. The actual costs associated with home ownership such as maintenance, property taxes, and mortgage interest, together with imputed depreciation, are excluded from the personal outlays in the U.S. personal income account and are considered to be expenses of the fictional enterprise. Any residual income, over housing expenses and depreciation, is imputed back to the personal income account as net rental income. Therefore, in effect, the depreciation of owner-occupied houses is excluded from personal saving and considered to be gross saving by the fictional housing enterprise. In terms of institutional and behavioral reality, however, it is households and not fictional enterprises that are doing this gross saving.

The national income accounting treatment of employers' pension contributions and benefits alters both the timing and the magnitude of household income receipts. Employers' pension contributions are viewed as if they were paid directly to employees, and therefore they are included in personal income. Ownership of employers' pension fund reserves is attributed to households and their earnings are treated as being paid to households even though no such payments are made. Furthermore, because employers' pension contributions are included as personal income, the national accounting treatment, in order to avoid double counting, excludes from personal income employee pensions actually paid to individuals. Where the retired population receives substantial pension benefits, this treatment makes analysis of the distribution of personal income somewhat meaningless. It is in direct contrast to the household survey approach, which excludes employers' contributions to pension reserves from household income but includes the payment of pension benefits. It is also in direct conflict with the U.S. national accounting treatment of social security contributions and benefit payments. Social security contributions (both employer and employee) are excluded from personal income, and social security benefit payments are included as income received by individuals.

Finally, denying the possibility of household capital formation leads to some awkward problems of definitional inconsistency. Household appliances purchased as part of owner-occupied houses are included as part of the gross capital formation of the fictional enterprises set up to own owner-occupied houses. However, the same appliances purchased separately are treated as current consumption expenditures by households. Again, automobiles purchased by businesses are included in gross capital formation, whereas those purchased by households are considered to be current expenditures. Unless, of course, an individual is reimbursed for the use of an automobile by the employer, then, as in the case of owner-occupied housing, a fictional enterprise is set up to which the depreciation charges are credited.

B. The Evidence on Household Gross Saving and Capital Formation

It is, of course, possible to modify the U.S. personal income and outlay account in such a way that it becomes a true household sector account. Such an account

would (1) exclude nonprofit institutions, (2) include the actual expenditures for owner-occupied housing, (3) treat pension benefit payments rather than employers' contributions to pension funds as income received by households, and (4) recognize the purchases of owner-occupied housing and consumer durables as gross capital formation by households. The details of these four adjustments are shown in Table 20.1 for the year 1989.

1. Nonprofit Institutions

Excluding nonprofit institutions from personal income means that the income they receive from their investments and buildings (\$43.2 billion), and the contributions they receive from enterprises and government (\$10.5 billion) should be deducted from personal income. In terms of outlays, it is necessary to add to household outlays those current gifts and contributions actually made by households (\$114.7 billion), and deduct the current outlays made by nonprofits. Unfortunately, in the U.S. national accounts data, there is no separate accounting for the current outlays of nonprofit institutions. Therefore, in Table 20.1, it has been assumed that the current outlays of nonprofits are equal to their current income (\$168.4 billion). This would mean that their current saving was zero, and their removal from the personal income account would not affect household saving.

2. Owner-Occupied Housing

In order to include owner-occupied housing in the household sector, the first step should be to exclude from household income the imputed net rental paid to households by the fictional housing enterprises (\$-23.4 billion). It should be noted that the official U.S. estimate of net imputed rental of owner occupied housing is negative for 1989, i.e., owner-occupied housing costs (including depreciation) exceeded the imputed space rental value of such housing. Therefore, excluding it from household income will actually increase household income. Secondly, the payment of imputed space rental value (\$371.1 billion) should be excluded from household outlays and in its place the actual housing expenses (\$305.3 billion) must be substituted. Finally, to impute the services of owner-occupied housing, the difference between the actual expenses and the space rental value should be treated as both income received and outlays by households. The results of all these adjustments (a) leaves household total outlays unchanged but (b) increases household income and household gross saving by the amount equal to what had been the capital consumption allowances of the fictional owner-occupied enterprise (\$89.2 billion).

3. Employers' Pension Funds

In the case of employers' pension funds, employers' contributions to pension reserves (\$58.6 billion), and the income earned on pension reserves (\$161.9

Table 20.1

Derivation of Household Income, Outlays, Gross Saving, and Gross Capital Formation, 1989 (billions of dollars)

Line	Item	Income 1	Outlays 2	Saving 3
1	U.S. Personal Income and Outlay Account	4,384.3	4,212.5	171.8
	Adjustments			
2	Non-profit institutions	-53.7	-53.7	0.0
3	Less: Investment and imputed rental income	-43.2		
4	Less: Business and Government transfers	-10.5		
5	Less: Current outlays of non-profits		-168.4	
6	Plus: Household contributions to non-profits		114.7	
7	Owner-occupied housing	89.2	-0.0	89.2
8	Less: Imputed net rental income	23.4		
9	Less: imputed space rental		-371.1	
10	Plus: Owner-occupied expenses		305.3	
11	Plus: Imputed housing services (gross)	65.8	65.8	
12	Employer pension funds	-56.1		-56.1
13	Less: Employers' pension contributions	-58.6		
14	Less: Pension fund earnings	-161.9		
15	Plus: Pension benefit payments	164.4		
16	Household capital formation	340.7	-133.9	474.6
17	Less: Consumer durable outlays		-474.6	
18	Plus: Imputed durable services (gross)	340.7	340.7	
19	Household gross income, current outlays and gross saving	4,704.4	4,024.9	679.5
20	Household gross capital formation		662.6	
21	Purchases of owner-occupied housing		188.0	
22	Purchases of consumer durables		474.6	
23	Household net lending			16.9
24	Enterprise gross capital formation		583.2	
25	Household net lending as percent of enterprise gross capital formation			2.9

Sources: Business and household contributions to nonprofits: *Statistical Abstract of the U.S. 1991*, Table 627.

Capital consumption of consumer durables: Board of Governors of the Federal Reserve System, *Flow of Funds Accounts, Second Quarter 1991*, Z1.

Owner-occupied housing, employer pension funds, consumer durables and enterprise capital formation: Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Vol. 70, No. 7, July 1990.

billion) should be eliminated from household income. The actual payment of pension benefits to households (\$164.4 billion) should be added. The consequence of these changes is a reduction in household saving (\$-56.1 billion).

4. Household Capital Formation

Finally, in order to treat household expenditures for durable goods as household capital formation, it is necessary to deduct them (\$474.6 billion) from household current expenditures. In their place an imputed value for the services provided by

durables owned by households can be added as both household income and consumption. This would be comparable to what was done above for the imputed services of owner-occupied housing. However, in the case of durable goods no attempt was made in Table 20.1 to impute the market value of the services of consumer durables. Instead, the imputed value was taken to be equal to the capital consumption of consumer durables (\$340.7 billion) as given by the Federal Reserve Board data on flow-of-funds. Since the imputation of durable services affects both income and outlays equally, it does not alter household saving. The removal of consumer durables as current outlays, however, does increase household gross saving by \$474.6 billion.

The consequence of all these adjustments demonstrates that when an actual household current income and outlay account is constructed for the year 1989, the gross saving of households is \$679.5 billion. However, as is also shown in Table 20.1, the household expenditures for their own capital formation of housing and consumer durables amounted to \$662.6 billion. Thus households' excess of gross saving over their capital formation (i.e., household net lending) amounted to only \$16.9 billion—an amount equal to less than 3 percent of enterprise capital formation.

Household gross saving, gross capital formation and net lending or net borrowing are given in Table 20.2 for the years 1947–89. It becomes apparent that the year to year changes in household gross saving, gross capital formation, and net lending as shown in Table 20.2 are strongly influenced by economic conditions. In periods of prosperity the gross capital formation of the household sector has often exceeded its gross saving. In these periods, the household sector has become a net borrower rather than a supplier of funds. In effect this means that the current and capital outlays that households actually make during periods of prosperity tend to exceed the income they receive. Conversely, in periods of recession household gross capital formation has often grown more slowly or has declined more than gross saving. In these periods, the household sector has become a net provider of funds.

This behavior of household net borrowing and net lending is precisely the opposite of that implied by the permanent income hypothesis. The permanent income hypothesis overlooks two very important institutional aspects of household behavior. First, for many households, saving is contractual and cannot be changed easily in the short run; the prime examples are repayment of home mortgages and consumer debt. Second, the omission of household capital formation neglects the point that in the short run the outlays for owner-occupied houses and durables can be reduced without commensurately disturbing the household's basic standard of living. Therefore, household gross saving often tends to be relatively stable, and it is the capital outlays of households that reflect the fluctuations in income.

Aggregate household savings data cannot be used directly to test the life-cycle hypothesis. Nevertheless, the importance of houses and consumer durables as

Table 20.2

Household Saving, Capital Formation, and Net lending, 1947-89 (billions of dollars)

Line	Year	Household Sector			Enterprise Sector Gross Capital Formation 4	Household Net Lending (+) or Net Borrowing (-) as % of Enterprise Gross Capital Formation 5
		Household Gross Saving 1	Household Gross Capital Formation 2	Household Net Lending (+) or Net Borrowing (-) 3		
1	1947	26.4	29.9	-3.5	25.5	-13.7
2	1948	34.4	35.3	-0.9	34.7	-2.6
3	1949	32.7	36.6	-3.9	24.9	-15.7
4	1950	43.3	47.6	-4.3	38.3	-11.2
5	1951	46.3	45.0	1.3	45.4	2.9
6	1952	46.6	44.5	2.1	38.3	5.5
7	1953	50.9	48.4	2.5	39.2	6.4
8	1954	49.6	49.4	0.2	36.8	0.5
9	1955	54.5	59.2	-4.7	48.9	-9.6
10	1956	58.6	54.0	4.6	56.9	8.1
11	1957	59.3	57.1	2.2	53.7	4.1
12	1958	64.0	55.4	8.6	45.4	18.9
13	1959	62.1	65.6	-3.5	57.4	-6.1
14	1960	60.9	64.8	-3.9	56.9	-6.9
15	1961	64.6	62.3	2.3	56.7	4.1
16	1962	67.7	68.5	-0.8	66.1	-1.2
17	1963	70.3	75.3	-5.0	69.6	-7.2
18	1964	82.1	70.5	11.6	75.9	15.3
19	1965	93.1	87.5	5.6	92.2	6.1
20	1966	98.2	90.8	7.4	106.3	7.0
21	1967	115.0	93.5	21.5	102.8	20.9
22	1968	122.8	106.0	16.8	112.0	15.0
23	1969	119.4	113.9	5.5	125.5	4.4
24	1970	134.6	113.2	21.4	113.3	18.9
25	1971	154.5	136.5	18.0	133.6	13.5
26	1972	159.3	159.2	0.1	154.0	0.1
27	1973	194.5	178.0	16.5	185.5	8.9
28	1974	190.0	172.4	17.6	191.6	9.2
29	1975	222.4	185.1	37.3	169.9	22.0
30	1976	228.4	228.9	-0.5	216.3	-0.2
31	1977	243.3	274.2	-30.9	254.4	-12.1
32	1978	264.3	309.8	-45.5	312.6	-14.6
33	1979	279.4	314.4	-35.0	359.4	-9.7
34	1980	304.9	300.7	4.2	355.6	1.2
35	1981	355.3	323.9	31.4	431.9	7.3
36	1982	360.1	325.1	35.0	374.9	9.3
37	1983	388.5	415.8	-27.3	375.6	-7.3
38	1984	469.8	470.7	-0.9	529.6	-0.2
39	1985	475.8	533.6	-57.8	481.7	-12.0
40	1986	528.7	580.3	-51.6	485.1	-10.6
41	1987	521.2	603.4	-82.2	519.2	-15.8
42	1988	622.6	651.4	-28.8	553.2	-5.2
43	1989	679.5	662.6	16.9	583.2	2.9
44	Total	8,299.9	8,400.3	-100.4	8,190.0	-1.2

Sources: For 1980-89: see sources for Table 1.

For 1947-79: Ruggles, Richard and Nancy D. Ruggles, "The Integration of Macro and Micro Data for the Household Sector," *Review of Income and Wealth*, Series 32, No. 3, September 1986.

elements of household spending and accumulation suggests a quite different scenario from that posited by the life-cycle hypothesis. During the early years of the life cycle, households purchase houses and consumer durables and acquire mortgages and consumer debt. Gradually, with advancing age, mortgages and consumer debt are paid off. At the time of retirement households have considerable equity in houses and durables. Although there is a life-cycle pattern, it is not the one suggested by the life-cycle hypothesis. It is not the accumulation of saving for old age that drives the system. Rather the dominant pattern relates to the acquisition of housing and durables by households in their formative years; in their middle and later years they repay mortgages and consumer debt, thus increasing their saving and accumulating equity.

Thus the effect of this life-cycle saving pattern on the supply of household saving available for non-household capital formation is the reverse of that predicted by the life-cycle hypothesis. A growing (and therefore young) population would not be a source of net lending, but rather would borrow from the other sectors to finance their purchases of houses and durables. Conversely, a declining population would include a large segment of households in the phase of their life cycle when they were paying off previously incurred debt, so households as a group would be suppliers of funds to other sectors. With the prospect of an aging population in the next few decades, therefore, the household sector may be expected to contribute more rather than less to the financing of other sectors.

In any event, the data on household gross saving and gross capital formation shown in Table 20.2 demonstrate that over the period from 1947-89 the household sector did not, on balance, provide the financing for enterprise capital formation. To obtain more insight into the saving and investment process, therefore, it is necessary to analyze the capital formation and saving of different enterprise sectors more directly.

NANCY D. RUGGLES

Financial Issues for the SNA Revision

(1987)

A. The Financial Accounts in the SNA Framework

One of the new features of the 1968 SNA¹ (hereafter referred to as the Blue Book) was the introduction of much expanded financial information. This expanded financial information is fully integrated into the accounting framework, as a further elaboration of the saving and net lending figures derived in the current accounts. The framework now provides for a complete accounting of the process by which the economy moves from its position at the beginning of the period (the opening balance sheet) to its position at the close of the period (the closing balance sheet). This paper is concerned with the capital finance account, the reconciliation account, and the balance sheet. These parts of SNA have been much less thoroughly developed than the accounts dealing with production and income flows, and a number of problems need consideration in the review of SNA.²

The changes in balance sheet figures from one date to the next necessarily reflect the transactions shown in the flow accounts covering that period. Reproducible tangible capital assets enter the stock of capital through gross capital formation, and leave it through consumption of fixed capital or scrapping, as shown in the capital accumulation account. Non-reproducible tangible assets and intangibles enter the balance sheet when they are the subject of a transaction appearing in the capital accumulation account. Financial assets and liabilities are created and extinguished through actions that appear in the capital finance account.

There are, however, other factors besides those appearing in the flow accounts that lead to changes in balance sheets from one period to the next. The chief of these is revaluation: changes in market prices. In addition, other types of capital

Reprinted, with permission, from Nancy D. Ruggles, "Financial Accounts and Balance Sheets: Issues for the Revision of SNA," *The Review of Income and Wealth* 33, no. 1 (March 1987): 39–62, with a few subsections omitted.

gain and loss may occur, and certain other adjustments may be required. All of these gains and losses are accounted for, in SNA, in the reconciliation account. Taken together, the transaction accounts and the reconciliation account provide a complete explanation of the change from one period to the next in the balance sheets of individual transactors, sub-sectors, sectors, and the nation as a whole.

At the time the Balance Sheet Guidelines were prepared, there was little country experience in the compilation of balance sheets upon which to base them, although there had been experimentation by researchers both in the construction of capital stock figures and in the compilation of partial balance sheets. Country experience has now broadened considerably. Among the statistically more developed countries, capital stock figures are becoming widely available. Balance sheets are still limited, but several countries have had experience in compiling them. It is therefore now possible to approach this topic with somewhat more confidence, both in the utility of the figures and in the feasibility of compiling them. It is also possible to identify certain problem areas, to which attention needs to be given.

Although some of these problem areas are limited to the financial accounts, many of them are the same ones that have already been identified in other contexts. None of the issues raised in this paper is new, and some have been debated from the early years of work on national accounts. But the changing nature of economic problems and policy concerns and the increasing focus on financial questions call into question some of the conventions that have been adopted and suggest that some reconsideration is now warranted. As the growth of financial analyses outside the national accounting system demonstrates, if the accounting system fails to accommodate the kinds of analyses now of interest to policy makers and researchers it will simply be by-passed, and the quality of both the traditional uses of the accounts and the newer ones will suffer.

1. Consistency of the Stock and Flow Accounts

The Balance Sheet Guidelines emphasize that the coverage of the balance sheet accounts must be congruent with that of the transaction accounts. Reproducible tangible assets must have been created by gross capital formation, and stocks of financial assets and liabilities through actions appearing in the capital finance account. Non-reproducible tangible assets, in SNA, in principle enter the balance sheet only when they have been the object of a market transaction shown in the capital accumulation account, i.e., when they are bought and sold. Some questions have arisen, however, in the application of these principles.

a. Statistical Feasibility

There is, first, a general question of statistical feasibility. It has been suggested that it may sometimes be possible to include items in the balance sheet that

cannot be compiled on a flow basis, or vice versa. Statistical feasibility varies, of course, with each country's individual circumstances. In view of the usual methods of compilation, however, it is not readily apparent why coverage of the stock and flow accounts need differ. For reproducible assets, stock figures are most often compiled by perpetual inventory methods, cumulating flows over a period of years. If flows are available, stocks can be compiled. For other assets, the reverse is generally the case: the primary data are for stocks, and flows are obtained as differences. But again, if one is available, the other can be obtained. In conceptual terms, the Guidelines position seems quite justified. Statistical difficulties are inevitable, but they should not be used as a reason for distorting the conceptual framework of the system. Nevertheless, the question needs explicit consideration.

b. Land and Other Non-reproducible Tangible Goods

Land, timber tracts, subsoil deposits and fisheries enter the transaction accounts of SNA when they are bought and sold or improved. While all non-reproducible tangible assets are part of the endowment of a country and yield benefits over an extended period of time, only the streams of benefits from those resources that are used in the commercial production of goods and services are generally priced in the market place and included in production. It is usually feasible to value these commercially used assets, and to include them in the balance sheets of their owners. A more debatable question arises in the case of assets of a similar type that have not been sold, but which have owners. It is, for instance, quite unrealistic to omit the value of subsoil assets from the wealth of petroleum producing countries, just because the assets belong to the government and have never been sold and are not likely to be. Similarly, some countries still have large amounts of unoccupied farm, range, and timber land. Inclusion of such assets does not contravene the principle of congruence of the flow and stock accounts. All accounting systems must begin at a fixed point in time, with an opening balance sheet which would include the value of land at that time. Improvements to it, and increases in its value through discovery of mineral resources, etc., or through price changes would then enter the accounts in the normal way.

In the absence of a sale, valuation of these assets often presents very difficult problems of both a conceptual and a statistical nature. The problems arise in some cases because long time periods are involved and contracts made in earlier periods may not reflect current conditions. This is true, for instance, of land subject to long leases, or of mines whose output is subject to a long term sales agreement. In other cases, current value depends upon unknown future events—conditions of supply and demand, prices and interest rates—and there is no existing market in the asset itself to provide a guide.

The valuation of subsoil assets is particularly difficult, since large and sudden alterations frequently occur in all of the factors entering into the calculation.

Estimates of economically usable physical reserves are highly dependent upon the price of the ultimate product, and that price often swings widely. They are also dependent upon technology, which changes constantly. And finally, new discoveries may be very important. Once the physical quantity of the reserve has been determined, furthermore, valuing it involves predicting prices and rates of return at future exploitation dates and choosing appropriate rates of discount to arrive at present values.

No satisfactory solution to these problems has yet been developed. Attention needs to be devoted to developing an appropriate methodology for the next version of SNA.

c. Household Durable Goods

The durable goods of households such as automobiles, refrigerators, washing machines and furniture are excluded from gross fixed capital formation in SNA. This treatment is somewhat anomalous since the same items are considered to be fixed assets when they are in the possession of producers (such as the providers of rental housing) and they do yield a stream of benefits to households over a number of years. Furthermore, possession of durable goods is an important element in the level of living of households and in their patterns of consumption and financial behaviour. However, the benefits households derive from these goods are not, in the present SNA, included in the production or consumption of goods and services, so that the inclusion of such assets in household balance sheets would create serious problems of reconciliation with the transaction accounts. It is on this basis that they are now omitted from the balance sheet, but SNA recommends that a supplementary table be prepared on household holdings of consumer durable goods.

Taken by itself, this treatment of consumer durables may seem reasonable. However, household durable goods are closely related to owner-occupied housing, and as household durable goods (especially automobiles) become more important, it is increasingly difficult to justify treating the two categories as differently as SNA now does. Various suggestions for bringing their treatment into closer harmony have been made. One possibility would be to treat durable goods as housing is now treated, establishing a nominal unincorporated enterprise to own them and furnish their services. This would involve estimating the value of the services of durables, and adding this value to both production and household consumption, while deducting actual expenditures on durables. An alternative possibility would be to treat both consumer durables and owner-occupied housing as assets on the balance sheet of households, and current costs relating to their use (e.g., maintenance, interest charges, and taxes) as part of household current outlays. As an adjustment in this latter approach, an estimate of both home-owners' imputed rental income and the imputed services of durables might be shown as a supplement.

2. The Structure of the Balance Sheet

To a certain extent, the structure of SNA's balance sheet was determined by earlier decisions taken with respect to other parts of the system. The 1968 SNA dealt mainly with the current transactions accounts, and it did not give much consideration to the impact of decisions taken there upon the balance sheet. The Balance Sheet Guidelines endeavoured to maintain compatibility with the current accounts as laid out in 1968, although this did not always prove to be entirely feasible.

a. Separation of Fixed Claims and Equities

The major division of the balance sheet in the Blue Book is between nonfinancial and financial entries. Nonfinancial entries are those whose changes appear in the capital accumulation account, and financial entries are those whose changes appear in the capital finance account. That boundary, in turn, is determined by SNA's choice of the concept of net lending as the balancing item in both accounts, and the specific definition given to it. For both of these there are alternatives, which are adopted by some countries. The alternative balancing item is gross saving; the definitional questions relate mainly to intangibles. A different treatment of these questions would lead to a differently structured balance sheet, which might be closer to conventional business and financial accounting practices.

The Balance Sheet Guidelines modify the arrangement adopted in the capital finance account of the Blue Book in one important respect, namely the separation of fixed claims from equity items. The main break, on the liability side, is no longer between liabilities and net worth, but rather between liabilities to "third parties," on the one hand, and the sum of liabilities to "second parties" (i.e., owners of the enterprise's equity) and net worth, on the other. On the asset side, capital participations are separated from other financial assets. Thus, fixed assets and liabilities are shown separately from equities on both sides of the account. The Guidelines also propose a similar restructuring of the capital finance account, to show changes in capital participations separately from changes in other financial assets and liabilities. This alteration in the structure of the balance sheet and capital finance accounts is clearly an improvement, since corporate and quasi-corporate equities are not liabilities in the usually accepted sense of that term, and this treatment brings the accounts closer to normal business practice. In most business accounts, a similar distinction is also made on the asset side of the balance sheet, separating fixed claim assets from equity securities.

b. Financial Assets and Liabilities Other Than Equities

The basic SNA classification of fixed claims is by liquidity, which is, of course, closely associated with type of instrument. Within this first-level breakdown,

two further distinctions are made. A separation is made between accounts payable in national currency and those payable in foreign currencies, and accounts with an original contractual maturity of one year or less are distinguished from those with longer maturities. In only one case does the classification of financial assets and liabilities provided in SNA (Table 7.2) and in the Balance Sheet Guidelines recommend any breakdown by institutional sector beyond the separation of foreign debtors and creditors: it is recommended that short term bonds and bills be subdivided according to debtor into (a) resident corporations, (b) central government, (c) state and local government, and (d) rest of the world.

Table 24 of SNA does provide for a breakdown of financial transactions by detailed subsectors of debtors and creditors. However, few countries are able to provide data at the level of detail required for this table. Yet the introduction of some institutional sector detail into the main capital finance and balance sheet accounts would be extremely useful. In particular, consideration may be given to the separation of government obligations. It is of considerable importance for financial analysis and the planning of monetary and fiscal policy for the government to know whether the public debt is held by banks and other financial institutions, public or private enterprises, or households. Secondly, a breakdown of long term loans would be desirable, in order to show debt secured by mortgages on residential and commercial property separately from other types of long term financing.

The Guidelines argue that fixed claims held as assets should, in principle, be valued in one of two ways, either (1) at nominal face value if they can be realized on demand or at short notice or if they cannot be transferred as assets from one transactor to another, or (2) at market value if they cannot be realized on demand but can be transferred. The application of this principle, tempered by considerations of practicality, results in its proposal that market values should be used to value fixed claim financial assets in the form of gold and long term bonds, and that face values be used for all others. However, this raises some problems with respect to the valuation of long term bonds as liabilities. The general SNA principle is that the same valuation should be used for a given claim whether it is viewed as an asset or as a liability, and this would require that long term bonds also be valued at market in the accounts of the issuer. The Guidelines offer a number of arguments in favour of this treatment. At the same time, it is recognized that this is not usual business practice, or indeed the practice followed in country financial statistics in many cases. Nor is it the International Financial Statistics (IFS) practice. The Guidelines suggest that supplementary tables showing nominal values of long term bonds should also be compiled. It may be desirable to reconsider this question for the future.

c. Equities

The Balance Sheet Guidelines note that valuation of the equity of both subsidiaries and quasi-corporate enterprises presents problems, and its recommendations

depart from those of the Blue Book. With respect to subsidiaries, where by definition the parent company owns 50 percent or more of the corporate stock, the parent company controls the magnitude of the subsidiaries' net worth since it determines the amount of dividends they pay and thus fixes the amount of saving they retain. It may therefore be argued that the subsidiaries do not have any independent net worth and that the value of the parents' equity securities in the subsidiaries is equivalent to the total value of the subsidiaries' assets less the total value of the subsidiaries' liabilities, after taking account of any minority interests. A similar argument is made for quasi-corporate enterprises. Quasi-corporate enterprises may be considered to have no independent net worth, since the proprietors determine the amounts they withdraw from or add to the capital of the enterprises and can appropriate all of it. The value of the proprietors' net equity in quasi-corporate enterprises would thus be equivalent to the total value of their assets less the total value of their other liabilities.

With respect to corporate equities as liabilities of the issuing firms, the Guidelines do recommend valuation at market, but point out that a good case can be made for the use of revalued paid-in value. The revalued paid-in value of all the outstanding equity securities, excluding treasury stock, of an incorporated enterprise is the sum of the actual amounts paid for sold issues of shares and the value of their issue of dividends and bonuses, revalued in terms of the current market prices of the assets of the enterprise. The use of this value for equity securities, together with market values elsewhere in the balance sheet, would result in a concept of net worth which is equivalent to the accumulated retained earnings and capital gains of the enterprise, valued in terms of current market prices of the assets. This definition of net worth is closely related to the concept of accumulated capital that is used in business accounting. It would yield figures of net worth that are indicative of the success of companies and of their dividend policies and the role of internal financing. The relationship between the revalued paid-in values and market values of the equity securities of incorporated enterprises is also of analytical interest.

IFS follows a still different practice. It considers that it is not essential that financial claims be valued identically when they are owned as assets and when they are owed as liabilities, and recommends different valuation of the same item in debtor and creditor balance sheets. The IFS procedure is to value financial assets at the present discounted value of expected future income streams, and to value financial liabilities at face value. For equity securities, "face value" appears to mean nominal paid-in value, without any revaluation, although IFS does not make this entirely clear.

Recent experience in the analysis of both private financial markets and fiscal policy strongly suggests that the accounting system should provide both valuations based on the discounted future stream of expected earnings and valuations reflecting the actual market value of assets and liabilities owned by enterprises, since the difference between the two is often a determinant of behavior. In terms

of financial markets, where a firm's discounted stream of future earnings valuation is lower than the market value of its net assets, it may be the target of a takeover aimed at liquidating its assets. In fiscal policy terms, the two valuations are required to compute Q -ratios, which reflect the extent to which enterprises will spend for new capital formation or will attempt to gain new capacity by merging with existing enterprises.

d. Intangibles

Various questions may also be raised about the treatment of intangibles. As the controversy surrounding the treatment of financial leasing makes apparent, such intangible assets as leases share many of the characteristics of financial assets, and it might be useful to combine them with other fixed claim assets. This is not true, however, of all types of intangibles. Such intellectual property as patents and copyrights (and, increasingly, such things as computer software) are much more akin to tangibles. They do not entail an offsetting liability, and so should enter into national wealth.

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3. The Reconciliation Account Entries

The 1968 SNA envisaged a complete accounting for the change in balance sheets from one period to the next through accounts covering transactions and a revaluation account to accommodate changes in prices. However, the Balance Sheet Guidelines issued in 1977 encountered various problems with the scheme as originally formulated. Some entries were needed that could not be considered revaluations, but for which no place had been provided in the transactions accounts. In order to avoid the necessity for altering the transactions accounts as laid out in the Blue Book, the scope of the revaluation account was expanded in the Guidelines to include all of these omitted items, and its name was changed from revaluation account to reconciliation account. This was, however, not intended as a permanent solution. The Guidelines point out that the boundary between the transactions accounts and the reconciliation account needs further study, and that this is one of the reasons why they were called "provisional."

The capital accumulation account covers the birth (through gross capital formation) and death (through capital consumption) of most tangible assets. However, there are some exceptions. Gross capital formation includes the birth of certain assets for which estimation of capital consumption is not recommended, such as improvements to land, the development and extension of plantations, and the construction of certain government assets such as roads and bridges. If these assets pass out of existence, their death is not provided for in the transactions accounts. Plantations, timber tracts, etc., may increase in value through natural growth, and this is not reflected in the capital accumulation account. Losses of tangible assets through natural catastrophes or unanticipated accidental damage,

or their premature retirement due to unforeseen obsolescence, do not appear in the capital accumulation account. Finally, the birth, through sale, of nonfinancial intangible assets is covered in the capital accumulation account, but their death is not. All of these omitted changes now appear in the reconciliation account.

The capital finance account covers the birth and death of financial assets and liabilities resulting from the foundation, liquidation, and most acquisitions and sales of enterprises. It does not, however, cover the disappearance or appearance of certain financial assets and liabilities because of expansion or contraction of the coverage of statistical units. A parent may actually acquire or divest subsidiaries, or the change may result simply from a redefinition of the statistical unit. Reclassification of statistical units among sectors or kind of activity classes may also result in changes not covered in the capital finance accounts of individual sectors, though the account of the nation as a whole will not be affected. All these omissions, again, are presently included in the reconciliation account.

The entries that now appear in the reconciliation account may be divided into those reflecting changes in prices and those reflecting changes in quantities. These are quite different in nature, and they are discussed separately below.

a. Revaluations Due to Price Change

This category covers the types of change originally envisaged in the 1968 SNA. It includes both realized and unrealized capital gains and losses arising from changes in market price or replacement cost of balance sheet items (depending on the method of valuation used), or in cases where value has been estimated by capitalizing an income stream, changes in the capitalization factor or rate of discount used in making the estimates. Where assets or liabilities are denominated in foreign currencies, changes in exchange rates may also enter here. Although the entries appearing here are often difficult to estimate, they do not usually present boundary problems: they are unambiguously revaluations, and as such belong here and not in the transactions accounts.

b. Special Drawing Rights

Special Drawing Rights were instituted by the International Monetary Fund after the publication of the 1968 SNA. SDRs are international reserve assets created by the IMF, representing the holder's unconditional right to obtain other reserve assets, usually foreign exchange. They are held exclusively by official holders, which are normally central banks. The process through which SDRs are created (referred to by IMF as allocations of SDRs) and may be extinguished (cancellation of SDRs) resembles an unrequited transfer, in that a resident (the official holder) acquires or gives up a financial asset but does not exchange for it anything of economic value. Increases or decreases in net allocations are accounted

for in the Guidelines in the reconciliation account. This treatment is largely a consequence of historical accident; as the Guidelines note, net allocations could with equal or superior logic be accounted for in the transactions accounts, along with other capital transfers.

c. Changes in the Quantity of Nonfinancial Assets

This group includes both tangible and intangible nonfinancial assets. Changes in these assets that are not accounted for in the transactions accounts fall into two general categories. One consists of items that were not discussed in the 1968 SNA, perhaps through oversight, but which can logically be fitted into the existing structure of the transactions accounts. The second category is of a rather different nature. It consists of capital gains or losses arising from changes in the physical quantity of tangible and nonfinancial intangible assets rather than from changes in their price. Where such changes result from production activities, they are included in the capital accumulation account. But where they result from activities or events not now defined as production-related, they are omitted from the capital accumulation account and shown in the reconciliation account. This in a sense is also a form of oversight—the 1968 SNA did not contemplate the existence of such changes in physical quantities. A good argument can be made that this category should be accommodated in the capital accumulation account, so that this account will reflect the full scope of physical capital accumulation. To accomplish this, however, a new type of entry in the capital accumulation account would be needed.

. . . .

d. Summary

There are two types of capital gains and losses not arising from the economy's current transactions activity that it would be desirable for the accounting system to show. One class arises from changes in prices of capital items, and the other from changes in physical quantities of capital items. Those arising from price changes are true revaluations, and belong in the revaluation account. With respect to those involving quantity changes, however, there is room for a difference of opinion. In view of the increasing importance of many of these gains and losses, it can be argued that they should be brought directly into the capital accumulation and capital finance accounts as new entries. It can equally be argued that they should be left in the reconciliation account; but, because of their increasing importance, that is a satisfactory solution only if the reconciliation account and balance sheet are actually compiled.

There are also a number of "oversight" items—matters not mentioned in the 1968 SNA—that can logically be accommodated in the transactions accounts. These include uncompensated seizures of assets, terminations of nonfinancial intangible assets, retirement of non-depreciated fixed assets, transfers of life insurance and pension fund reserves to the net equity of households, and certain

types of reclassification and restructuring. The Guidelines put these entries in the reconciliation account in order not to require changes in the transactions accounts, but in the next revision of the transactions accounts they can more logically be accommodated there.

B. The Financial Accounts and Institutional Sectoring

The SNA institutional sectoring conventions differ somewhat both from those of IFS and those generally employed in country financial statistics. This section reviews the main differences with a view to identifying candidates for reconsideration in the next version of SNA, both in order to promote the harmonization of statistical standards and on their own merits.

The IFS sectoring of transactors closely parallels the SNA institutional sectoring, but there are a few important differences. Although in IFS, like SNA, each institutional reporting unit is usually assigned to a single sector, a few specific exceptions to this rule are made in order to differentiate clearly between the financial system and the nonfinancial public sector. The IFS financial system comprises monetary authorities (rather than SNA's central bank), deposit money banks (rather than SNA's other monetary institutions), and nonmonetary financial institutions (replacing SNA's three remaining subsectors: insurance companies, pension funds, and other financial institutions). IFS further divides its nonmonetary financial institutions sector into two parts: other banklike institutions and nonbank financial intermediaries.

In addition, unlike SNA, IFS does not regard social security funds as a separate part of government. Rather, social security operations are considered part of the central government or of the other levels of government at which they operate. (In this, IFS differs from the proposed revised version of the IMF's *Government Finance Statistics*, where the social security funds are separated out.)

Thus, the chief differences between the SNA sectoring and that of IFS relate to the boundary between government and the financial system and the way in which the latter is subsectored. But there are also differences, of more importance for SNA than IFS, in the treatment of the nonfinancial part of the economy, i.e., quasi-corporate and unincorporated enterprises, household nonmarket activities, and social security funds. Some of these differences can be reconciled through the provision of more detailed information in one system or the other, but others imply important differences in approach.

1. Financial Institutions

a. Central Bank/Monetary Authorities

IFS considers that the international comparability of the data sought for purposes of monetary analysis requires that the monetary authority accounts encompass all

monetary authority functions. This functional approach differs from the SNA approach, in which monetary authority functions carried out by bodies other than the central bank in most instances are attributed to the institutional sectors where those bodies are found—usually the government sector. Where governments have retained control over currency issue (either coins or bank notes), the accounts associated with this function are consolidated with the monetary authority accounts in IFS, but not in SNA. Certain functions relating to the maintenance of international reserves are also transferred in IFS, but not in SNA.

SNA recognizes that these central-bank-like functions may be performed outside of the central bank in some cases, but it adopts a different approach to displaying the relationships involved. Because it is concerned with all of the activities of the economic agents whose accounts it presents, not just one particular aspect such as their role in financial intermediation, SNA considers it important that the institutional integrity of the decision-making transactor units be maintained in the basic accounts. It does recognize, however, that the uses with which IFS is concerned are important to many analysts, and suggests that a supplementary table may be drawn up to show central-bank-like functions performed by entities other than the central bank.

b. Other Monetary Institutions/Deposit Money Banks

In SNA, the subsector of financial institutions called "Other monetary institutions" is defined to include all banks except the central bank that have liabilities in the form of deposits payable on demand and transferable by check or otherwise usable in making payments. IFS defines an analogous subsector called "Deposit money banks," but it is a slightly different group. While banks and similar institutions usually are the main issuers of deposit money, institutional arrangements may permit other financial transactors to incur transferable deposit liabilities that are generally recognized as means of payment. This is particularly true where governmental institutions incur such liabilities through postal giro systems. The IFS regards such financial transactions as taking place in notionally separate financial units which it consolidates with the deposit money bank accounts. Also, when the treasury or some other governmental unit accepts transferable deposits from the general public, the deposits are classified by IFS, but not SNA, in the deposit money bank account.

c. Nonmonetary Financial Institutions

IFS and SNA treat the remaining financial institutions, those not included in the monetary authority and deposit money banks in IFS or in the central bank and other monetary institutions in SNA, in quite different ways.

In the first place, the subsectors that are identified are different. This in itself need not cause any insurmountable problems of comparability, because it can be

overcome by adding more detail to both sets of accounts. IFS identifies two subsectors: (a) other banklike institutions, and (b) nonbank financial intermediaries. SNA identifies (a) insurance companies and pension funds, and (b) other financial institutions.

Innovations in the field of finance such as credit cards and electronic transfer of funds raise fundamental questions about the measurement of an economy's means of payment, questions that have as yet been addressed by neither IFS nor SNA. Furthermore, some innovations are calling into question the very concept of "transferable" deposits. In some countries transferable deposits are a declining share of total liabilities of financial institutions, and in some demand deposits are now less important than other deposits even for the deposit money banks. This changing pattern reflects shifts in the preferences of businesses and individuals in favor of interest-earning assets that are readily exchangeable for money, and against actual money holdings, and it is what has led financial analysts to develop M2, M3 . . . , in addition to the M1 which SNA is aimed at measuring. IFS regards those nonmonetary financial institutions able to issue money-substitutes as a distinct class, which it calls "banklike institutions." This group includes savings banks, credit cooperatives, mortgage banks, government development banks (provided they do not rely exclusively on government sources of funds), and certain "offshore" units whose main dealings are with nonresidents. In SNA, however, institutions of these types are classified as "Other financial institutions," together with sales-finance, hire-purchase and other business and personal finance companies, money-lenders, securities brokers, and investment companies, funds, societies and trusts. There would be no conceptual problem, however, in splitting out a subsector in SNA to match the IFS definition. As the proliferation of *M* measures indicates, different problems require different concepts, and this is one field where showing more detail is probably desirable.

Conversely, SNA distinguishes separately a subsector composed of insurance companies and pension funds. In IFS, these are grouped together with trust and custody accounts, real estate investment schemes, other pooled investment schemes, and compulsory savings schemes in a subsector called "Nonbank financial intermediaries." Again, there would be no conceptual problem in showing insurance companies and pension funds separately in IFS. A more serious incompatibility arises, however, in the ways in which the accounts of insurance companies and pension funds are handled in the two systems.

d. Insurance Companies and Pension Funds

The IFS treatment of insurance companies and pension funds is in most respects the same as that of conventional business accounting. In the IFS view, the primary function of these institutions is the conversion of individual risks into the risks of the entire insured community. Households and businesses regard their transactions with insurance companies and pension funds partly as current

expenditures and partly as acquisitions of financial assets, but since the value of the financial assets acquired from these intermediaries depends on future exigencies, their present worth to holders can only be established by imputation. For this reason, IFS does not attempt to measure them. The financial assets of insurance companies and pension funds are clearly definable, however, and data on their holdings of financial instruments are frequently available. Normally, these assets comprise the investments the companies hold to meet required technical reserves. The existence of such technical reserves is, in the IFS view, a necessary condition for classification of insurance companies and pension funds as financial institutions.

The SNA treatment is radically different from this. Casualty insurance is treated quite differently from life insurance and pension funds, but in both cases the entries in the financial accounts and balance sheets are closely related to, and dependent upon, the way these transactions enter the current transactions accounts.

(1) *Casualty Insurance.* For casualty insurance companies (fire, theft, health, unemployment, etc.), gross premiums received are divided into (1) a charge for the service of insuring and (2) a payment for risk. The total payment for risk during a given period is taken to be equal to the total claims paid during that period. The charge for the service of insuring is the remainder—namely, gross premiums less claims—and this is entered as a sale in the production account of the insurer and a purchase by the insured. The payment for risk enters the income and outlay accounts of both insurer and insured, and the payment of casualty insurance claims is also entered into this account, on the opposite side. Since these last two entries are by definition equal, for the economy as a whole both net casualty insurance premiums and casualty insurance claims drop out.

It follows from this treatment of casualty insurance in the current accounts that there is no place in the system for any casualty insurance technical reserves. Casualty insurance risks are spread over classes of insurance purchasers, but they are not spread over time; the claims of each accounting period are fully paid for in that accounting period. The balance sheet of a casualty insurance company compiled on this basis would contain no indication that it had any future liability to its policyholders. (One consequence of this treatment is that by the IFS definition, casualty insurance companies would not be financial institutions at all, since they would not have any technical reserves.) This conclusion is not only logically indefensible, it is also contrary to the legal requirements of most countries.

(2) *Life Insurance and Pension Funds.* The SNA treatment of life insurance and pension funds is more complex. In addition to payments for the service of insuring and for risk, life insurance premiums are considered to include a substantial element of saving, in the form of accumulated reserves. These reserves are treated as assets of the covered individuals, not as part of the independently held reserves of the insurance companies or pension funds. An entry entitled "Net

equity of households in life insurance and pension funds" is entered as a liability on the balance sheet of the companies or funds, and as an asset on the balance sheet of households. In contrast with the treatment of casualty insurance, life insurance and pension benefits received by individuals do not enter the current transaction accounts of the beneficiaries at all; they appear only as changes in the form of the beneficiaries' assets in the capital finance and balance sheet accounts.

This treatment is a major exception to the general SNA principle of maintaining the integrity of the accounts of institutional transactors. Households do not in fact receive these funds, and, as the IMF notes, it is not possible to make an objective valuation of their worth to the insured. Households do not control the funds, they have no access to them, and often even their claim to ultimate receipt of benefits from them is tenuous. This is particularly true of pension funds, where employees may lose their rights by changing jobs, or through other circumstances over which they have no control, and where the magnitude of the fund often reflects the profitability—or lack of it—of the sponsoring companies, rather than expected benefits. In the case of life insurance, ultimate receipt of benefits depends upon continued payment of premiums over a future interval, and policy holders often fail to maintain the insurance until they can collect on it—a factor that insurance companies rely upon in setting rates. Until the claims become due, the reserve funds are available to the companies for use as earning assets, and the earnings accrue to the companies, not the policy holders. It has therefore been proposed that what should be included in the assets of the policy holder or pension fund participant is only the present cash surrender or loan value of his accumulated rights. In the case of life insurance policies with a substantial element of saving such as endowment or annuity policies this may be a substantial fraction of the relevant reserve. But where the insurance element predominates, as in term policies, there may be no cash surrender value at all. For employer-provided pension funds, the cash surrender value is usually negligible until retirement age is reached. The remainder of the reserves, apart from cash surrender value, would be retained as assets of the companies involved. This treatment would, apart from the question of cash surrender value, be compatible with the IFS procedure.

Such a treatment of pension fund and life insurance reserves on the balance sheets of households and financial institutions would, of course, require consistent treatment in their capital finance accounts. It would also have repercussions on their income and outlay accounts, where it would be necessary to alter the treatment of actual benefit receipts to show all benefits (both life insurance and pension) over and above the cash surrender values as current incomes of households at the time they are actually received.

This treatment of life insurance and pension funds would also produce aggregates that would be compatible with the recommendations of the *Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation* (United Nations, series M, no. 61 [1977]). These Guidelines, like those on balance

sheets, were developed substantially later than the 1968 Blue Book, and as in the case of the Balance Sheet Guidelines, it was found that difficulties arose from the uncompleted state of the Blue Book system. It was apparent that the Blue Book treatment of pensions and life insurance would produce unacceptable distribution figures, since pensioners and annuity recipients would be shown with zero income. In this case, however, unlike that of the Balance Sheet Guidelines, it was decided that the needs of distribution statistics could not be met using the Blue Book concepts, and new aggregates were developed. The resulting income distribution statistics are therefore compatible with the present aggregate SNA system in only a limited sense: the totals to which the distributions sum can be reconciled, through a series of adjustments, to the SNA aggregates, but these distribution totals appear nowhere in the overall SNA system.

The treatment of insurance and pension funds has been discussed in some detail in another paper,³ and a repetition of that discussion is beyond the scope of this one. The topic is, however, one that needs consideration in the next version of SNA.

2. The Social Security Subsector

The original intent of the framers of SNA in setting up a separate social security funds subsector was to accommodate cases, such as then existed in Sweden, where the administration of the social security system was quite separate from any level of government proper and clearly constituted an independent center of financial decision-making. In such cases, it was considered likely that the central government would not control the level of either contributions or benefits, and that it would not manage the investment of the fund. As time has passed, however, country interpretation of this provision has not followed this principle. A social security funds subsector is often identified even when the social security system is an organ of the central government and completely under its control; sometimes such a subsector is identified even when any fund that exists is inadequate to meet required benefit payments and is regularly supplemented from the ordinary budget. The argument advanced in favor of this treatment is that social security is a large and growing part of the government's total obligations, and it is often considered by both the government and the participants in the system to be separate from other government functions. The growing interest in such concepts as "social security wealth"—or legal entitlements to future social security benefits—as well as in the potential solvency or insolvency of the fund attest to the importance of providing complete data in this area. But it does not follow from this that provision of a separate subsector is the best way of doing that.

The IMF position on this question is somewhat ambiguous, since there appears to be a difference between the stance taken in IFS that social security systems operating at the national level should be included in central government

even if they are separately organized and the recommendations of the revised version of GFS that a separate social security subsector be shown. One possible solution, which may be what the revised GFS intends, would be to show the social security system as a further breakdown within the central government.

3. *Quasi-Corporate and Unincorporated Enterprises*

In its production accounts and its capital stock tables, SNA groups all kinds of enterprises together—government, public, private; corporate and noncorporate; profit-making and nonprofit; and large and small—dividing them up only by kind of activity (industry). IFS apparently extends this unitary enterprise sector to the financial accounts and balance sheets. In SNA's institutional sectoring, however, distinctions are made among types of enterprises. Nonprofit enterprises have a sector of their own. Corporate enterprises are distinguished, and noncorporate enterprises are divided into quasi-corporate and unincorporated. All *financial* enterprises—down to and including money lenders—are classed as quasi-corporate and grouped with corporations. For *nonfinancial* enterprises, the basic rule is that quasi-corporate enterprises should have complete financial accounts and balance sheets, separate from those of their owners. In practice SNA recommends that only large enterprises be considered for inclusion in this class. SNA does not define what should be considered to be "large." However, the European Community, in its European System of Accounts (ESA), has adopted specific size criteria: more than 100 employees in manufacturing, more than 50 in services, and more than 20 in agriculture. Nonfinancial unincorporated enterprises that do not qualify as quasi-corporate are grouped with households in a combined household and unincorporated enterprise sector.

Country experience does not appear to offer very much support for the SNA position, and even less for the ESA rules. Few have identified a nonprofit sector. Some countries have identified a few public nonfinancial quasi-corporations, but very few have made use of the concept of private nonfinancial quasi-corporation. As a consequence, the general practice is to leave all private unincorporated enterprises, both financial and nonfinancial and of whatever size, in the household sector.

This does not matter much as long as interest is confined to the production and income and outlay accounts. By definition, any production of the household sector apart from the activities of domestic servants is taking place in an unincorporated enterprise, so that in effect the production account of the household and unincorporated enterprise sector is the production account of unincorporated enterprises alone. Conversely, the income and outlay account of the combined sector is really the income and outlay account of households only, since the income and outlay account of unincorporated enterprises can only contain one pass-through entry (operating surplus) on each side. Much the same is true of the

capital accumulation account; all of the entries except for net saving can only pertain to unincorporated enterprises, not to households, and given the treatment of entrepreneurial income, net saving can only pertain to households, not to unincorporated enterprises.

It is only in the capital finance account and balance sheet that any mingling of the unincorporated enterprise and household accounts is conceptually possible. Even here, however, most types of assets and liabilities are clearly separable. In the first place, households, in SNA, cannot own tangible assets; such assets (including owner-occupied dwellings) must all be the property of unincorporated enterprises. Financial assets and liabilities are usually allocable by type. Only unincorporated enterprises, for example, can extend or receive trade credit; only households can have equity in life insurance and pension fund reserves or quasi-corporate enterprises. Consumer loans are made to households; loans secured by productive assets to enterprises. Few unincorporated enterprises will hold corporate equity securities. Even cash and deposits are normally held either in the name of the business or the name of the household. (Where nothing is held in the name of the business, that is in fact a true reflection of the actual situation, and it is not misleading to show it that way.)

This point of view is further reinforced when actual sources of data are considered. Data for the capital finance account and balance sheet are most often obtained primarily from the financial institutions involved, rather than from the business or householder involved. Financial institutions know whether they are dealing with businesses or individuals; they know whether loans are for consumption or production purposes, and whether bank accounts belong to businesses or individuals. What they do not know, and cannot possibly provide information on, is the size of the business; discussions with banking personnel suggest that size criteria such as those of ESA are impossible to apply.

This suggests that some alteration in the SNA recommendation would be desirable. There are several possibilities. Perhaps the most useful would be to set up a combined enterprise sector, divided by legal form of organization into corporate, noncorporate, and nonprofit subsectors. Further subdivisions would also be useful: financial/nonfinancial and public/private, as at present, but also where possible into broad kind of activity groups: farm, mining and manufacturing, trade, and service. An alternative would be to subdivide the present household and unincorporated enterprise sector into its two component parts. (This would, however, still leave the question of what to do about quasi-corporations. Leaving them as an unused appendage of corporations has little but inertia in its favor. It would also leave the problem of nonprofits, which is especially important in terms of balance sheets. Common practice now combines nonprofits with households, and this leads to the anomalous result that the only tangible assets allocated to the household sector are hospitals, schools and the like.)

4. Owner-Occupied Dwellings

SNA includes as production several types of household nonmarket activity, including subsistence farming, small manufactures, and own-account capital formation. None of these creates any problems with respect to sectoring; they are all activities of unincorporated enterprises owned by the households engaging in them, and whatever is done with the unincorporated enterprises should also be done with these activities.

There is, however, one type of household nonmarket activity that is of a different nature, and that is the occupation of dwellings by their owners. In most developed countries, this is by far the largest of the imputed household activities. SNA treats it in a way that is different from all other consumption activities. The owner-occupier, in his capacity as owner, is considered to be renting the dwelling to himself in his capacity as occupier, and a notional unincorporated enterprise is set up to accommodate the provision of this service. The unincorporated enterprise is classified in the real estate industry. The household is considered to pay an imputed space rent to the unincorporated enterprise, which in turn owns the house, carries the mortgage, and pays the taxes and the costs of household operation. The unincorporated enterprise then returns any net profit to the household, as imputed rental income. The imputed space rent is in principle set equal to the rental of comparable properties that are rented. In practice, however, it is often the case that no comparable rented property can be found. This is especially likely to be true in rural and suburban areas. In that case, cost is substituted. The costs taken into account include operating costs, maintenance and repair, insurance service charges, property taxes, imputed depreciation, and an imputed net return.

This treatment of owner-occupied dwellings in the production and income and outlay accounts, of course, requires consistent treatment in the financial accounts and balance sheets. Owner-occupied dwellings are considered to be the property of unincorporated enterprises in the real estate industry, not of households. Since household durable goods are not considered in SNA to be capital assets, it follows that the household balance sheet (if nonprofit institutions are excluded) can contain no tangible assets at all. This result is an anomalous one when the balance sheet of the sector as a whole is considered, and it becomes entirely unacceptable for the analysis of the distribution of wealth among households. As studies of the distribution of wealth universally show, residential housing is a major share of the total assets of all households except those at the very top and very bottom of the income or wealth distribution. Most home owners consider that what they own is a house or apartment, not net equity in a real estate enterprise. They are very conscious, furthermore, of their outstanding mortgage liability as well as their net equity. While they are often aware that home owning may be cheaper than renting, they do not consider the difference to be an imputed addition to their income, but rather a reduction in their expenditures.

A more realistic treatment would retain owner-occupied dwellings as assets of the household sector, and count the actual costs of owning and operating the house (such as mortgage interest, maintenance, and taxes) as a part of current consumer outlays. This would not preclude gathering all residential housing together in the real estate industry; household-owned dwellings could be included just as government-owned ones now are. Nor would it preclude the estimation of a net imputed return on owner-occupied dwellings if that were considered desirable; but it would make the method of imputation explicit.

C. Summary and Conclusions

The issues relating to the financial accounts that need consideration in the review of SNA arise out of the growing uses of these accounts, their sometimes ambiguous role in the SNA structure, and their relation to other international statistical systems. As was noted at the beginning of this paper, the 1968 SNA provided a place in the framework for the financial accounts and balance sheets, but did not develop them in any detail. In the 19 years since the Blue Book was published, the situation has changed significantly. In the first place, policy and analytic interest in questions of financial intermediation and its impact on the operation of the economy has greatly increased, as inflation, high interest rates, and debt management have become worldwide problems. In the second place, much work has been done, both on the conceptual development of this part of the system and on the compilation of statistics in many countries. And at the same time, financial statistics outside the SNA system, and the international standards relating to them, have grown rapidly in availability and elaboration. The need for reconciliation is increasingly recognized as of first importance. For all of these reasons, some of the early decisions made when financial considerations were not the focus of attention need reconsideration; some of the makeshift solutions that have grown up over time are no longer adequate; and some issues that have not been dealt with at all need to be addressed.

The points that have been brought up in this paper fall into two general categories: those dealing with the definition, valuation, and arrangement into accounts of financial *transaction flows* and the stock items related to them, and those dealing with the identification and classification into sectors of the *transactors* of the system. The first group, in this paper, has been called accounting structure, and the second, sectoring.

With respect to accounting structure, there is, first, a group of questions affecting the content of the balance sheet and capital finance account, and the arrangement, classification, and valuation of the items they contain. Most important of these, perhaps, is the separation of financial assets and liabilities into two categories: fixed assets and liabilities on the one hand, and equities and net worth on the other. Questions of content include the treatment of land

and other natural resources, residential housing, and consumer durables; and of pension and life insurance reserves. Questions of classification include the disposition of intangibles and the introduction of institutional sector detail. Questions of valuation arise in connection with the reconciliation of the SNA accounts with IMF and country practices relating to financial liabilities and equities and the treatment of insurance and pension fund reserves.

A second group of questions relates to the reconciliation account and its relation to the capital accumulation account. The most important question here is the separation of capital gains and losses arising from price changes, which properly are accommodated in the revaluation account, from those involving quantity changes, which are forms of capital accumulation or decumulation. Entries involving quantity changes that appear in the reconciliation account because no place was provided for them in the Blue Book can easily be accommodated in the capital accumulation account. Some of them, such as new finds and depletion of subsoil assets, raise important problems of valuation, however. Provision also needs to be made for some items that are now completely omitted, including a more rational treatment of depreciation, depletion, and amortization.

Finally, on accounting structure, consideration needs to be given to the impact of changes made in the financial accounts on the current flow accounts. In particular, the treatment of capital consumption, insurance, and expenditures on housing and consumer durables may need attention.

With respect to sectoring, a first group of questions relates to the reconciliation of various international standards. There are differences between SNA and the various IMF standards in the boundaries drawn between government and financial institutions, and among households, financial institutions, and nonfinancial enterprises. There are also differences in the way subsectors are delineated which affect all of the major sectors of SNA. A second group of questions (which overlaps the first) arises out of changing needs and changing institutional forms, including the blurring of the concept of money, the growing importance of pension fund reserves and their domination of financial markets, and the increasing focus on households' distribution of income, saving behavior, and holdings of tangibles and financial assets and liabilities.

The SNA framework provides an admirable way to integrate financial information with data on production, income, and capital formation. Because of the sequential implementation of the various parts of the system, however, the financial accounts in SNA now have a certain jerry-built character. And because of changing institutional forms and policy problems over the course of the past 19 years, insufficient emphasis is given to problems that are now important and present-day institutional forms are not adequately portrayed. It is to be hoped that the opportunity to rationalize the financial accounts afforded by the ongoing review of SNA will not be allowed to pass by.

Notes

1. *A System of National Accounts*, series F, no. 2, rev. 3 (New York: United Nations, 1968). Specific definitions and classifications and standard accounts were later provided in *Provisional International Guidelines on the National and Sectoral Balance-Sheet and Reconciliation Accounts of the System of National Accounts*, series M, no. 60, published by the United Nations in 1977, and in *Guidelines on Statistics of Tangible Assets*, series M, no. 68, published in 1979.

2. This discussion draws on UNSO's *Draft Manual on Financial Statistics* (prepared with the assistance of Jacques Mayer), as well as the International Monetary Fund's *International Financial Statistics* (IFS), *Balance of Payments Manual* (BOP), and *Government Finance Statistics Manual* (GFS).

3. OECD, *The Treatment of Pension and Insurance Transactions in the United Nations System of National Accounts*, report prepared by Nancy D. Ruggles and Richard Ruggles, Meeting of National Accounts Experts (May 25-27, 1983). A substantially similar paper was published in *The Review of Income and Wealth*, 29, no. 4 (December 1983).

JOHN C. DAWSON

The Conceptual Relation of Flow-of-Funds Accounts to the SNA

(1991)

Finance and the Evolution of the SNA

As background to a consideration of the relationship between the flow-of-funds accounts (FOF) and the SNA, it will be useful to review briefly the evolution of the SNA itself over the past 35 years: the so-called standard accounts as they first appeared in the 1953 version of the SNA,¹ then as they appeared in the 1968 version,² and finally as they might appear in the revision under consideration (SNA 1993). Several key features of each phase of the evolution will be discussed in turn.

The 1953 SNA

The standard accounts as initially laid out in the 1953 SNA focus on the circular flow of product and income. Accounts 1 and 2—the domestic product and national income accounts—present on the right side the sale of the final product and on the left side the income and other payments generated in producing the product.³ Accounts 3 through 6—domestic capital formation, households and private nonprofit institutions, general government, and external transactions (rest-of-world account)—are the accounts that receive the income and, taking account of the various transfer and financing operations, use it in purchasing the product. This portrayal of the income circuit in the accounts thus separates the

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activity of production from all other activities engaged in by the institutional sectors of the economy—the activities that later came to be associated with income and outlay or capital finance. The foundation of the 1953 SNA system is a cross-classification of the economy: once by activity and once by institution. This first key feature is an obvious and familiar one.

The second key feature is that these standard accounts consist of a set of balancing and interlocking accounts. One source of the analytical power of the system is that each account balances conceptually, that each is a selection of receipt items providing the finance for its corresponding group of disbursement items; each is a balancing statement of sources and uses of funds. Another source of the system's analytical power is its interlocking character. That is, each disbursement (use of funds) item in one account can be matched to an equal receipt (source of funds) item in a different account. The system is technically a quadruple entry system: a change in any one item implies a change in at least three other items. These are characteristics that greatly facilitate the tracing of intersectoral economic impacts.

In connection with this interlocking feature, it is necessary to consider account 6, external transactions (rest-of-world account). The treatment of this account in the 1953 SNA—and in the 1968 SNA as well—is somewhat ambiguous with respect to the point of view represented by the account.

On the one hand, the title and wording of the account imply that it is an assembly of the domestic sector records of international transactions—as in a balance of payments account. Thus we have an external transactions account, an account derivable by consolidating all the domestic sector accounts—accounts 1 through 5. Such an account records transactions from the viewpoint of the domestic sectors. In this view the account reflects one kind of domestic sector activity, and the rest of the world is not an institutional sector in a system of national accounts.

On the other hand, if the accounts are to be considered as a complete system of interlocking accounts, account 6 must be viewed as recording the transactions of the rest of the world (e.g., a domestic sector receipt in accounts 1 through 5 must be matched by a rest-of-world *disbursement* in account 6). In the 1953 SNA, this view is implied both by the interlocking coding of account items and by the consistency with which the accounts elsewhere record sources of funds on the right and uses of funds on the left. In this view the right side of account 6 should be labeled (rest-of-world) receipts rather than (domestic sector) disbursements. It would seem desirable to remove this ambiguity in SNA 1993. And if the interlocking feature of the system is as important as we assert, it would seem that the external transactions account should become unambiguously a rest-of-world account, and the rest of the world should become an institutional sector in a closed social accounting system.

A third key feature of the 1953 SNA is the analytical significance of the system. This feature was unquestionably a central motivation for the statistical

development of the accounts. First, Western economic analysis had universally accepted the circular flow of product and income as a central organizing concept. Further, GDP (or some variant of it) was becoming widely accepted as an important measure of overall economic performance. In addition, the Keynesian hypothesis that GDP is determined by aggregate demand remains even today the key practical hypothesis in macroeconomic analysis. In the 1953 SNA aggregate demand is prominently set out in account 1. These accounts, particularly the sector accounts, also contain a judicious selection of other important variables—for example, household income and saving, the general government current deficit (saving), and the economy's external surplus on current account. Moreover, as was noted above, all the variables are related through the balancing and interlocking feature. Finally, although the 1953 SNA accounts are somewhat cluttered with items of minor importance for many countries, the scheme is simple enough to be analytically manageable. The list of such characteristics could be extended, but suffice it to say that the scheme was nicely designed and timed to catch on as a tool for economic analysis.

Finally, since the ultimate purpose here is to relate the SNA to finance, it is necessary to consider the portrayal of finance in these standard accounts. At first sight, account 3 appears to be a capital formation account for the whole economy, showing domestic capital formation together with its methods of finance. But these methods of finance (items 3.7 and 3.8), despite their labels as "finance," are imputed items measured as types of real capital formation. If one consolidates the three capital reconciliation accounts (for households and the like, general government, and the rest of the world) with account 3, however, one obtains an account for capital formation together with the elements of sector saving that ultimately finance it (items 4.6, 5.5, and 6.6; see the 1953 SNA, standard table V). Because this consolidated "saving and investment" account was in practice substituted for account 3 and the reconciliation accounts were never developed, the best sense of the 1953 SNA from the viewpoint of finance is to see the system as presenting the sector surpluses that ultimately finance real investment but as not presenting any information about the flows in financial assets and liabilities by which the saving moves through the financial system into investment. These flows in financial claims have in effect been consolidated out.

The 1968 SNA

Moving forward 15 years to the next stage in the evolution of the accounts, the 1968 version of the SNA, three different systems of standard accounts are apparent. The first consists of the four consolidated accounts for the nation (accounts 1, 3, 5, and 6). This system is then deconsolidated in two quite separate ways. One method deconsolidates the GDP and expenditure account (account 1) in the direction of detailed production analysis. Because the concern here is finance, this path will not be pursued. The other deconsolidates the national income and

outlay account (account 3) and the national capital finance account (account 5) into five domestic sectors each. When these 10 accounts are put together with the GDP and external accounts (accounts 1 and 6), one has a 12-account version of the 1968 SNA. This is the standard system we shall examine as the 1968 SNA.

How have the various key features that were sketched for the 1953 SNA fared in this revision? The 1968 SNA focuses even more sharply on the circular flow of income and product than did its predecessor. Note that the first two accounts in the previous system, the domestic product and national income accounts, have here been merged into a single GDP and expenditure account (account 1). Thus all of the GDP expenditure flows are on one side of account 1, and all of the equal income flows—here called gross domestic income—are on the other side of the same account.

With respect to the balancing and interlocking features, the former is clearly present. But in the sector accounts the parenthetical references that specified the interlocking character of the previous system have disappeared. The 1968 SNA is nevertheless interlocking, but in a somewhat different sense. It should be understood as a matrix of accounts with balancing cross totals (total sources and uses for each transaction type), as well as balancing down totals (total sources and uses for each account). For example, the sum of the final consumption expenditure items as disbursements equals, conceptually, final consumption expenditure as receipts; similarly, total property income receipts should equal property income disbursements. The analytical power of the quadruple entry system is in this way preserved.

From the viewpoint of financial analysis, this 12-account system takes two crucial steps forward. Although the consolidated capital finance account (account 5) remained similar to the earlier capital formation or saving-investment account in that it presented only the ultimate origins of the finance of investment, the deconsolidated sector capital finance accounts each present, as well, the immediate financial sources and uses. That is, these accounts show details of the net incurrence of liabilities and the net acquisition of financial assets as well as the sectors' saving (income and outlay surplus) and capital formation. Figure 22.1 shows this detail on the capital finance account for corporate nonfinancial enterprises. In the 1968 SNA these financial flows are for the first time defined (other than residually) and classified. Such data make possible a very useful and straightforward analysis of how a sector finances itself and how it contributes to the finance of other sectors.

The second crucial step forward occurs by virtue of the separate sectoring of financial institutions in the 1968 SNA domestic sector breakdown. As pointed out in the 1953 SNA,⁴ the separate sectoring of financial institutions is necessary for a meaningful analysis of the financial flows. This is because of the intermediary role played by financial institutions in providing finance to governments and to the enterprise and household sectors. This role is characteristic of developing

**Figure 22.1 Nonfinancial Enterprises, Corporate and Quasi-Corporate;
Account 5, Capital Finance Account**

5.2.5	Increase in stocks	5.7.1	Saving (A 3.7.1)
5.2.6	Gross fixed capital formation	5.3.3	Consumption of fixed capital
5.7.4	Purchases of land, net	5.7.6	Capital transfers, net
5.7.5	Purchases of intangible assets n.e.c., net		
5.7.8	Net lending (A 5.7.9)		
Gross accumulation		Finance of gross accumulation	
5.8.1	Gold	5.7.9	Net lending (A 5.7.8)
5.8.2	Current and transferable deposits	5.9.4	Bills and bonds, short-term
5.8.3	Other deposits	5.9.5	Bonds, long-term
5.8.4	Bills and bonds, short-term	5.9.6	Corporate equity securities, including capital participations
5.8.5	Bonds, long-term	5.9.7	Short-term loans n.e.c.
5.8.6	Corporate equity securities, including capital participations	5.9.8	Long-term loans n.e.c.
5.8.7	Loans n.e.c.	5.9.10	Proprietors' net additions to the accumulation of quasi-corporate enterprises
and 8		5.9.11	Trade credit and advances
5.8.10	Proprietors' net additions to the accumulation of quasi-corporate enterprises	5.9.12	Other liabilities
5.8.11	Trade credit and advances	and 13	
5.8.12	Other financial assets		
and 13			
Net acquisition of financial assets		Net incurrence of liabilities plus net lending	

as well as developed economies; almost all countries have important central bank and commercial banking institutions.

It is the matter of analytical significance that raises questions about the 12-account system of the 1968 SNA; it appears to be far more complex than the 6-account system of the 1953 SNA. How much more analytically effective is the newer system? Is the added detail worth the effort to collect it? At least some sector detail is necessary to facilitate intersectoral impact analysis, and separate sectoring of financial institutions is essential for effective financial analysis. Thus a meaningful system should accommodate, it would seem, no fewer than four domestic sectors.⁵

But proliferation of sectors is not in fact the main source of added complexity, which stems primarily from added transaction-type detail in the income and outlay accounts and the capital finance accounts.⁶ These classification schemes could be substantially condensed with little analytical loss for the purposes of standard national accounts. Furthermore, with respect to the detail on financial transactions presented in the sector capital finance accounts, effective financial analysis requires not only less detail but detail of a different sort, which will be proposed below in the discussion of SNA 1993. Suffice it to say here that a standard system containing well-designed sector capital finance accounts would be capable of producing financial system analysis far beyond the capability of the 1953 SNA.

Types of National Accounts Data Currently Submitted

Thus far the U.N. schemes of what was *desirable* in social accounting data have been discussed. There is also a need to observe what has been happening in practice over the past 35 years. One way of doing this is to look at what types of data the countries of the world are able to submit for the United Nations' compendium of national accounts.⁷ Table 22.1 summarizes a recent survey of this kind.

One can see in Table 22.1 strong evidence that the 1953 SNA scheme has taken hold in practice. Almost all of the 146 reporting countries are producing a GDP account (GDP, 1.1, and income, 1.3), although it is true that for many countries these data are not yet current. Most also provide the GDP by industry (1.10) and in constant prices (1.2 and 1.11). More than half are able in time to add current accounts for general government (1.4) and the rest of the world (1.7), as well as a capital formation (saving-investment) account (1.8). These four accounts are four of the five needed for the closed 1953 SNA system referred to above, in which the capital reconciliation accounts are merged with the domestic capital formation account to form a saving-investment account. About a quarter of the reporting countries are able to add a household income and outlay account (not shown in table) and form the complete system.

Table 22.1 reports 1983 data, but its source compendium was published in 1986—more than 15 years after the publication of the 1968 SNA. Do we find evidence of its impact? The reporting scheme does not include the 1968 SNA's account 3 (national disposable income and its appropriation—the consolidated income and outlay account) or account 5 (capital finance—the consolidated capital finance account). So apparently the four "consolidated accounts for the nation" as a standard scheme did not take hold. As regards the deconsolidated 12-sector scheme, only a handful of countries—perhaps 10 percent, largely in Europe—are able to report sector income and outlay accounts at the level of detail of the 1968 SNA, and a still smaller handful—perhaps 5 percent—are able to report detailed sector capital finance accounts. Thus one must conclude that the 1968 SNA is not widely used as a system of standard accounts.

Implications for SNA 1993

In formulating SNA 1993, it is important to consider why the 1968 SNA has had so little impact. The data suggest an important clue: whereas 58 percent of the countries reporting could submit a summary account of general government current receipts and expenditures, only 11 percent could submit one at the level of detail required by the standard system; for the external account, the corresponding figures are 73 percent and 11 percent, respectively. One might infer that the 1968 SNA is too complicated and detailed for most countries to produce at present. Moreover, it is this author's view that the 1968 SNA contains too

Table 22.1

Major Types of National Accounts Data Reported in U.N. Compilation for 1983

Item	Percentage of Countries Reporting	
	Current data	Current or back data
1.1 Expenditures on the gross domestic product (current prices)	53	98
1.2 Expenditures on the gross domestic product (constant prices)	48	73
1.3 Cost components of the gross domestic product	46	84
1.4 General government current receipts and expenditures, summary	24	58
1.7 External transactions on current account, summary	38	73
1.8 Capital transactions of the nation, summary (saving and capital formation)	37	62
1.10 Gross domestic product by kind of activity (current prices)	49	94
1.11 Gross domestic product by kind of activity (constant prices)	49	76
1.12 Relations among national accounting aggregates	50	82

Source: United Nations, *National Accounts Statistics: Main Aggregates and Detailed Tables*, 1983 (New York, 1986).

Note: All tables for which more than half of the countries (146 countries reporting in accordance with the SNA) reported either current or back data are included here.

much insignificant detail for straightforward policy analysis. These suggestions underscore the objective in the current revision process of presenting a simpler standard set of accounts.

Flow-of-Funds Representation in the SNA

What, then, should inform a vision of the about-to-be-created SNA 1993 standard accounts? If the main lesson of the 1968 SNA is to be heeded, the new accounts should not be far ahead of the current statistical accomplishment of most countries. To be serviceable, the new accounts should be next steps in feasible statistical development. In addition, the analysis has stressed the need to maintain sector accounts in the standard central system. In addition, sector capital finance accounts and the separate sectoring of financial institutions are

needed for effective financial analysis. Are these objectives compatible? It appears so.

In sketching a suggested new system, let us begin where a good many countries are now: they have a gross product and income account; income and outlay accounts for the rest of the world, general government, and households (including within it nonprofit institutions); and a consolidated capital formation (saving-investment) account. Let us move along the lines of the 12-account scheme of the 1968 SNA but keep in mind the need for simplification.

First, envision a vertical extension of the rest-of-world account to derive its capital finance account and a similar extension for general government. The development of full balance of payments and government finance data for most countries during the past few decades should make this a relatively easy step. (However, the balance of payments data must be in local currency.)

Three capital finance accounts remain: for nonfinancial enterprises, for financial institutions, and for households and the like (including nonprofit institutions). Imagine them lumped together into a single residual capital finance account. For analytical purposes it is essential to estimate and break out an account for at least a large share of financial institutions. For many countries this can be done through an account for the monetary and banking system alone, and these basic data are available for almost all countries. As noted below, it is analytically less essential to break nonfinancial enterprises away from households and the like, but such a step would in any event have to await the compilation of balance sheet data for a substantial group of enterprises. If the SNA 1993 wishes to emphasize feasibility, a first-stage version of it might contain, first, a capital finance account for the monetary and banking system and, second, a catch-all capital finance account for other domestic sectors.

Consider also the types of financial transactions to be used. As suggested earlier, much of the difficulty in producing sector capital finance accounts may stem from the complexity of the classification scheme for financial claims. For SNA 1993, a greatly condensed scheme consisting of four broad financial categories is suggested: (a) foreign assets; (b) currency and deposits; (c) bills, bonds, and loans; and (d) other claims.

The existing 13 claim categories can, of course, be allocated to these headings.⁸ The purpose here is only in part simplification. In many applications foreign assets (category a), properly defined, will consist largely of net foreign exchange. In addition, currency and deposits (category b) is closely related to money, broadly defined. So these categories are likely to be of analytical use.

To understand why category c as a whole might *not* be very useful, consider such an item in the various 1968 SNA capital finance accounts. Each of the sectors might accumulate and each of them might issue these instruments. In these circumstances it would generally not be possible to identify who is acquiring from whom (i.e., who is financing whom). And narrowing the category to

long-term bonds would probably not improve matters. But consider the category of central government bond issues. Here only one sector issues the instrument. In the absence of secondary market transactions, the acquiring sector is financing the government. Even with secondary market transactions, there is a much better chance with government bond issues of being able to identify who is financing whom—and that is the central objective in financial flow tracing. To generalize, the most useful financial transaction types will be “sector-oriented transaction types,” those designed to have only one or two sectors issuing or only one or two sectors acquiring the instrument. Category c needs to be broken down.

Perhaps the simplest effective breakdown for the bills, bonds, and loans that make up category c would be into central government debt, bank loans, and other, but most countries should consider at least the following:

- c. bills, bonds, and loans
 - 1. central government debt
 - 2. central government loans
 - 3. central bank advances
 - 4. financial institution loans and advances
 - 5. other debt.

This or a similar list should be adopted for the SNA 1993 standard accounts to suggest the type of detail that countries would find analytically useful.

In summary, producing the accounts as presented in the 1968 SNA sector capital finance accounts requires a high level of financial detail—detail that is generally available only in the most statistically advanced countries. Further, the transaction types in these accounts are not very effective in financial flow analysis; they provide little sector-to-sector identification of flows. The alternative classification presented above is simpler and can be derived directly from data available in almost all countries. In addition, this classification is demonstrably useful in financial flow analysis.

In conclusion, the FOF accounts should be represented in SNA 1993 by a closed set of condensed capital finance accounts for the rest of the world, general government, and monetary and banking sectors, and the other domestic sector. To form a standard system, a gross product and income account and three income-outlay accounts (rest of the world, general government, and households and the like, including nonprofit institutions) could be added to these four capital finance accounts.⁹ These eight accounts could form a closed, interlocking system—a system that in its condensed form is achievable for most countries in the next decade or so and that could be a standard first stage leading to a later, more detailed standard system.

If financial analysis is to have an improved social accounting data base, increased statistical effort must focus on the sector capital finance accounts. To help in this effort, these accounts must have a prominent place in formulation of the simplest, central, U.N. standard accounts.

. . . .

Most of the 160 or so countries of the world are developing countries. And one of the features of a developing country is a developing statistical system. Unfortunately, the 1968 SNA did not take into account the fact that a great many countries have only the most limited capacity for producing new and improved data. One surmises that this was one key reason why the 1968 SNA has been, as concluded above, too complicated and detailed for most countries to produce during the past 20 years; the goals were set too far ahead of the possibilities.

In presenting its full set of standard accounts and supporting tables, the only concession the 1968 SNA made to development was a suggested order in which the full accounts should be implemented.¹⁰ The developing countries were not offered any intermediate targets leading up to the full system. In particular, they were not offered simpler versions that, although within their statistical capabilities, would offer the analytical advantages of a social accounting system (i.e., of a closed set of interlocking accounts). In fact, a simple but analytically effective form of the flow-of-funds system can now be implemented quickly and easily by most developing countries (see reading 13).

A number of elements in our analysis have suggested that the new SNA design should take an evolutionary view of the development of national accounts. Much of the 1968 SNA has not been implemented by most countries, and, as noted, there are indications that it is too complex to be a feasible next step in statistical development for many countries. Moreover, the actual process of flow-of-funds estimation necessarily has an evolutionary character. The new SNA might wish, therefore, to present both simpler and more complex standard systems, in a sequence that would provide developing countries with a useful immediate system and, at the same time, with guidance in achieving the full SNA system.

Notes

1. U.N. Statistical Office, *A System of National Accounts and Supporting Tables*, studies in methods, series F, no. 2 (New York: United Nations, 1953).

2. U.N. Statistical Office, *A System of National Accounts*, studies in methods, series F, no. 2, rev. 3 (New York: United Nations, 1968).

3. If accounts 1 and 2 are consolidated, one obtains gross national product on the right and an income total on the left that may be referred to as gross national income.

4. Page 14, paragraph 285: "No further classification of these [net changes in financial assets and liabilities] flows is undertaken in the system since, to produce meaningful results, this would require a greater number of sectors including, in particular, a separate sector for banks and other financial intermediaries."

5. Private nonprofit institutions serving households need not be a separate sector in the standard accounts.

6. When social accountants try too hard for conceptual neatness, complexity is sometimes the result.

7. United Nations, *National Accounts Statistics* (New York: United Nations, annual).

8. The allocation is straightforward except for category a. Foreign assets consist of all rest of the world liabilities held by domestic sectors as financial assets. In the cases of the central bank and the commercial banks, however, it is somewhat customary to assign to this category (by netting against their foreign assets) certain of their short-term deposit liabilities held by the rest of the world. In this way, the foreign asset holdings of these two banking sectors become net foreign exchange—the balances used to effect international transactions.

9. A simplification would be not to have separate income-outlay accounts for nonfinancial enterprises or financial institutions. The latter account is analytically insignificant, and the former greatly overlaps in content the gross product and income account. In effect, these two income-outlay accounts could be merged with the larger account without loss of analytical power.

10. Note that the chapter in the 1968 SNA devoted to developing countries was devoted to how the *full system*, presumably once that system was achieved, could be adapted to the development situation.

INTER-SECRETARIAT WORKING GROUP ON
NATIONAL ACCOUNTS

Financial Accounts in the
New SNA 1993

1993

I. INTRODUCTION

A. The SNA as a System

1.1. The System of National Accounts (SNA) consists of a coherent, consistent and integrated set of macroeconomic accounts, balance sheets and tables based on a set of internationally agreed concepts, definitions, classifications and accounting rules. It provides a comprehensive accounting framework within which economic data can be compiled and presented in a format that is designed for purposes of economic analysis, decision-taking and policy-making. The accounts themselves present in a condensed way a great mass of detailed information, organized according to economic principles and perceptions, about the working of an economy. They provide a comprehensive and detailed record of the complex economic activities taking place within an economy and of the interaction between the different economic agents, and groups of agents, that takes place on markets or elsewhere. In practice the accounts are compiled for a succession of time periods, thus providing a continuing flow of information that is indispensable for the monitoring, analysis and evaluation of the performance of an economy over time. The SNA provides information not only about economic activities, but also about the levels of an economy's productive assets and the wealth of its inhabitants at particular points of time. Finally, the SNA includes an

Excerpted, with permission, from Inter-Secretariat Working Group on National Accounts, *System of National Accounts 1993* (Brussels/Luxembourg, New York, Paris, Washington, DC: Commission of the European Communities, International Monetary Fund, Organization for Economic Co-operation and Development, United Nations, World Bank, 1993), pp. 1-2, 60-65, 241-44, 257-61.

external account that displays the links between an economy and the rest of the world.

1.2. The SNA may be implemented at different levels of aggregation: at the level of individual economic agents, or institutional units as they are called in the System; for groups of such units, or institutional sectors; or at the level of the total economy. Although traditionally described as a system of national accounts, for analytical purposes the SNA has to be implemented at lower levels of aggregation. In order to understand the workings of the economy, it is essential to be able to observe and analyze the economic interactions taking place between the different sectors of the economy. Certain key aggregate statistics, such as gross domestic product (GDP), that are widely used as indicators of economic activity at the level of the total economy, are defined within the System, but the calculation of such aggregates has long ceased to be the primary purpose for compiling the accounts.

1.3. The System is built around a sequence of interconnected flow accounts linked to different types of economic activity taking place within a given period of time, together with balance sheets that record the values of the stocks of assets and liabilities held by institutional units or sectors at the beginning and end of the period. Each flow account relates to a particular kind of activity such as production, or the generation, distribution, redistribution or use of income. Each account is balanced by introducing a balancing item defined residually as the difference between the total resources and uses recorded on the two sides of the account. The balancing item from one account is carried forward as the first item in the following account, thereby making the sequence of accounts an articulated whole. The balancing items typically encapsulate the net result of the activities covered by the accounts in question and are therefore economic constructs of considerable interest and analytical significance—for example, value added, disposable income and saving. There is also a strong link between the flow accounts and the balance sheets, as all the changes occurring over time that affect the assets or liabilities held by institutional units or sectors are systematically recorded in one or another of the flow accounts. The closing balance sheet is fully determined by the opening balance sheet and the transactions or other flows recorded in the sequence of accounts.

B. Accounts and Their Corresponding Economic Activities

1.4. The purpose of this section is to give a very brief summary of the main sequence of accounts in order to describe the main features of the System before discussing other related issues. It is impossible to do justice to the wealth of information contained in the System in a short section of this kind, and reference should be made to chapter II for a comprehensive overview of the System. Before summarizing the sequence of accounts, it should be noted that although it is necessary to present the accounts in a particular order, the activities they

describe should not be interpreted as taking place sequentially in time. For example, incomes are generated continuously by processes of production, while expenditures on the outputs produced may also be taking place more or less simultaneously. An economy is a general equilibrium system in which interdependent economic activities involving countless transactions between different institutional units are carried out simultaneously. Feedbacks are continually taking place from one type of economic activity to another.

1. The Sequence of Accounts¹

Current Accounts

1.5. These accounts record the production of goods and services, the generation of incomes by production, the subsequent distribution and redistribution of incomes among institutional units, and the use of incomes for purposes of consumption or saving.

Production Account. 1.6. The production account records the activity of producing goods and services as defined within the System. Its balancing item, gross value added, is defined as the value of output less the value of intermediate consumption and is a measure of the contribution to GDP made by an individual producer, industry or sector. Gross value added is the source from which the primary incomes of the System are generated and is therefore carried forward into the primary distribution of income account. Value added may also be measured net by deducting consumption of fixed capital.

Distribution and Use of Income Accounts. 1.7. These consist of a set of articulated accounts showing how incomes are:

- generated by production
- distributed to institutional units with claims on the value added created by production
- redistributed among institutional units, mainly by government units through social security contributions and benefits and taxes
- eventually used by households, government units or nonprofit institutions serving households (NPISHs) for purposes of final consumption or saving.

1.8. The balancing item emerging from the complete set of income accounts is saving. The income accounts have considerable intrinsic economic interest in themselves. In particular, they are needed to explain the behaviour of institutional units as final consumers—that is, as users of the goods and services emanating from production for the satisfaction of the individual and collective needs and wants of households and the community. The balancing item, saving,

is carried forward into the capital account, the first in the System's sequence of accumulation accounts.

Accumulation Accounts

1.9. These are flow accounts that record the acquisition and disposal of financial and non-financial assets and liabilities by institutional units through transactions or as a result of other events:

- The capital account records acquisitions and disposals of non-financial assets as a result of transactions with other units or internal bookkeeping transactions linked to production (changes in inventories and consumption of fixed capital).
- The financial account records acquisitions and disposals of financial assets and liabilities, also through transactions.
- A third account, the other changes in assets account, consists of two sub-accounts. The first, the other changes in volume of assets account, records changes in the amounts of the assets and liabilities held by institutional units or sectors as a result of factors other than transactions; for example, destruction of fixed assets by natural disasters. The second, the revaluation account, records those changes in the values of assets and liabilities that result from changes in their prices.

1.10. The link between the accumulation accounts and the income accounts is provided by the fact that saving—that is, disposable income that is not spent on consumption goods or services—must be used to acquire financial or non-financial assets of one kind or another, if only cash, the most liquid financial asset. When saving is negative, the excess of consumption over disposable income must be financed by disposing of assets or incurring liabilities. The financial account shows the way in which funds are channeled from one group of units to another, especially through financial intermediaries. Access to finance is a prerequisite for engaging in many types of economic activities.

Balance Sheets

1.11. The balance sheets show the values of the stocks of assets and liabilities held by institutional units or sectors at the beginning and end of an accounting period. As already noted, the values of the assets and liabilities held at any moment in time vary automatically whenever any transactions, price changes or other changes affecting the volume of assets or liabilities held take place. These are all recorded in one or another of the accumulation accounts so that the

Table 23.1

Integrated Economic Accounts*

Current accounts

Uses										Code
Accounts	Total	Goods and service (res.)	Rest of the world	Total economy	S.1 NPSHs	S.16 Households	S.14 General government	S.13 Financial corporations	S.12 Non-financial corporations	
I. Production/external account of goods and services	499 540 3 604 1 883 133 1 854 222 1 632	499 540 3 604 1 883 133 1 854 222 1 632	540 -41	1 883 1 632	9 28	694 533	252 158	29 63	899 717	P.7 P.6 P.1 P.2 D.21-D.31 B.1g/B.1*g K.1 B.1n/B.1*n
II.1.1. Generation of income account	768 191 133 58 459 442 247 432	768 191 133 58 459 442 247 432	6 0 0 0 459 442 247 432	762 191 133 58 459 442 247 432	23 0 0 0 8 92 5 60 432	39 2 2 2 92 442 60 432	140 2 2 2 46 55 16 45	15 3 3 3 55 258 121	545 51 51 51 258 258 121	B.11 D.1 D.2-D.3 D.21-D.31 D.29-D.39 B.2g B.3g B.2n B.3n
II.1.2. Allocation of primary income account	454 1 883 1 661	454 1 883 1 661	63 1 661	391 1 883 1 661	6 9 6	41 1 409 1 367	42 227 197	167 29 19	135 209 72	D.4 B.5g B.5n/B.5*n
II.2. Secondary distribution of income account	213 322 332 278 1 854 1 632	213 322 332 278 1 854 1 632	1 0 0 9 1 854 1 632	212 322 332 269 1 854 1 632	0 1 1 2 43 40	178 322 0 71 1 206 1 164	0 289 141 386 356	10 29 45 33 23	24 13 10 186 49	D.5 D.61 D.62 D.7 B.6g B.6n
II.3. Redistribution of income in kind account	228 1 854 1 632	228 1 854 1 632	 228 1 854 1 632	228 1 854 1 632	16 27 24	212 1 434 1 392	174 174 144	33 33 23	186 186 49	D.63 B.7g B.7n
II.4. Use of income account	1 399 1 399F 11 455 233 -41	1 399 1 399F 11 455 233 -41	0 0 -41	1 399 1 399 11 455 233	16 0 27 24	1 243 1 015 202 160	156 368 0 -18 12	11 0 22 12	0 186 49	B.6g B.6n P.4 P.3 D.8 B.8g B.8n B.12

1 For the valuation of output and the resulting contents of the items "taxes on products" and "subsidies on products", refer to chapter VI, paragraphs 6.210 to 6.227.

2 For the total economy this item corresponds to gross domestic product, net domestic product respectively. It is equal to the value added of the institutional sectors plus taxes on products less subsidies.

*This is Table 2.8 in SNA 1993.

Transactions and other flows, stocks and balancing items	Resources							Goods and service (uses)	Total
	S.11 Non- financial corpo- rations	S.12 Finan- cial corpo- rations	S.13 General govern- ment	S.14 House- holds	S.15 NPISHs	S.1 Total eco- nomy	Rest of the world		
Imports of goods and services							499		499
Exports of goods and services								540	540
Output ¹	1 753	102	440	1 269	40	3 604			3 604
Intermediate consumption								1 883	1 883
Taxes less subsidies on products ¹						133			133
Value added, gross/Gross domestic product ²	854	73	188	575	31	1 854			1 854
Consumption of fixed capital									
Value added, net/Net domestic product ²	717	63	158	533	28	1 632			1 632
External balance of goods and services							-41		
Compensation of employees				766		766	2		768
Taxes less subsidies on production and imports			191			191	0		191
Taxes less subsidies on products ¹			133			133	0		133
Other taxes less subsidies on production			58			58	0		58
Operating surplus, gross	258	55	46	92	8	459			459
Mixed income, gross				442		442			442
Operating surplus, net	121	45	16	60	5	247			247
Mixed income, net				432		432			432
Property income	86	141	32	150	7	416	38		454
Balance of primary incomes, gross/National income, gross	209	29	227	1 409	9	1 883			1 883
Balance of primary incomes, net/National income, net	72	19	197	1 367	6	1 661			1 661
Current taxes on income, wealth etc.			213			213	0		213
Social contributions	14	39	268	0	1	322	0		322
Social benefits other than social transfers in kind				332		332	0		332
Other current transfers	10	49	108	36	36	239	39		278
Disposable income, gross	186	33	386	1 206	43	1 854			1 854
Disposable income, net	49	23	356	1 164	40	1 632			1 632
Social transfers in kind				228		228			228
Adjusted disposable income, gross	186	33	174	1 434	27	1 854			1 854
Adjusted disposable income, net	49	23	144	1 392	24	1 632			1 632
Disposable income, gross	186	33	386	1 206	43	1 854			1 854
Disposable income, net	49	23	356	1 164	40	1 632			1 632
Actual final consumption								1 399	1 399
Final consumption expenditure								1 399	1 399
Adjustment for the change in net equity of households on pension funds				11		11	0		11
Saving, gross									
Saving, net									
Current external balance									

Table 23.1 (continued)

Accumulation accounts

Changes in assets

Accounts	Total	Goods and service (res.)	Rest of the world	S.1 Total economy	S.16 NPISHs	S.14 Households	S.13 General government	S.12 Financial corporations	S.11 Non-financial corporations	Code
III.1. Capital account										B.8a B.12 P.51 K.1 P.52 P.53
	376			376	19	61	37	9	250	
	-222			-222	-3	-42	-30	-10	-137	
	28			28	0	2	0	0	26	
	10			10	0	5	3	0	2	
	0		0	0	1	4	2	0	-7	K.2
										D.9 D.9
										B.10.1
	0		-38	38	4	148	-52	6	-68	B.9
III.2. Financial account	691		50	641	32	181	120	237	71	F F F.1 F.2 F.3 F.4 F.5 F.6 F.7
	0		1	-1			0	-1		
	130		11	119	12	68	7	15	17	
	143		5	138	12	29	26	53	18	
	254		10	244	0	5	45	167	27	
	46		2	44	0	3	36	3	2	
	36		0	36	0	36	0	0	0	
	82		21	61	8	40	6	0	7	
III.3.1. Other changes in volume of assets account	15			15	0	2	1	-2	14	K.3-10 and K.12
	24			24	0	0	0	0	24	K.3
	3			3	0	0	3	0	0	K.4
	4			4	0	0	4	0	0	K.5
	-9			-9	0	0	-2	0	-7	K.6
	-11		0	-11	0	0	-6	0	-5	K.7
	0		0	0	0	0	8	-3	-5	K.8
	1		1	0	0	0	0	0	1	K.9
	3		0	3	0	2	0	1	0	K.10
	0		0	0	0	0	-6	0	6	K.12
	10		0	10	0	0	0	-2	12	of which:
	-7		0	-7	0	0	-3	-2	-2	AN
	17		0	17	0	0	3	0	14	AN.1
	5		0	5	0	2	1	0	2	AN.2 AF
										B.10.2
III.3.2. Revaluation account ³	280		0	280	8	80	44	4	144	K.11
	126			126	5	35	20	2	63	AN
	154		0	154	3	45	23	2	81	AN.1
	91		7	84	1	16	2	57	8	AN.2 AF
										B.10.3

3 "Changes in net worth due to saving and capital transfers" is not a balancing item, but corresponds to the total of the right-hand side of the capital account.

4 "Changes in net worth due to saving and capital transfers" for the rest of the world refers to changes in net worth due to current external balance and capital transfers.

5 Differences between data on individual items and totals of holding gains/losses may not be entirely consistent due to rounding errors.

Changes in liabilities and net worth								
Transactions and other flows, stocks and balancing items	S.11 Non- financial corporations	S.12 Financial corporations	S.13 General govern- ment	S.14 House- holds	S.15 NPISHs	S.1 Total eco- nomy	Rest of the world	Goods and service (uses) Total
<i>Saving, net</i>	49	12	-12	160	24	233	-41	233
<i>Current external balance</i>								-41
Gross fixed capital formation								376
Consumption of fixed capital (-)								28
Changes in inventories								10
Acquisitions less disposals of valuables								
Acquisitions less disposals of non-produced non-financial assets								
Capital transfers, receivable	33	0	6	23	0	62	4	66
Capital transfers, payable (-)	-16	-7	-34	-5	-3	-65	-1	-66
<i>Changes in net worth due to saving and capital transfers¹</i>	66	5	-40	178	21	230	-38	192
<i>Net lending (+) / net borrowing (-)</i>	-68	6	-52	148	4	38	-38	0
Net acquisition of financial assets\								
Net incurrence of liabilities	140	232	170	33	28	603	88	691
Monetary gold and SDRs								
Currency and deposits	0	130	2	0	0	132	-2	130
Securities other than shares	6	53	64	0	0	123	20	143
Loans	71	0	94	28	24	217	37	254
Shares and other equity	26	13	0		4	43	3	46
Insurance technical reserves	0	36	0		0	36	0	36
Other accounts receivable/payable	37	0	10	5	0	52	30	82
<i>Other volume changes, total</i>	-3	2	-1	0	0	-2	0	-2
<i>Economic appearance of non-produced assets</i>								
<i>Economic appearance of produced assets</i>								
<i>Natural growth of non-cultivated biological resources</i>								
<i>Economic disappearance of non-produced assets</i>	0	0	0	0	0	0	0	0
Catastrophic losses	0	0	0	0	0	0	0	0
Uncompensated seizures								
<i>Other volume changes in non-financial assets n.e.c.</i>	-4	2	0	0	0	-2	0	-2
<i>Other volume changes in financial assets and liabilities n.e.c.</i>	1	0	-1	0	0	0	0	0
<i>Changes in classifications and structure</i>								
Non-financial assets								
Produced assets								
Non-produced assets								
Financial assets/Liabilities	-3	2	-1	0	0	-2	0	-2
<i>Changes in net worth due to other changes in volume of assets</i>	17	-4	2	2	0	17	0	17
<i>Nominal holding gains/losses¹</i>								
Non-financial assets								
Produced assets								
Non-produced assets								
Financial assets/Liabilities	18	51	7	0	0	76	3	78
<i>Changes in net worth due to nominal holding gains (+) / losses (-)</i>	134	10	38	96	10	288	4	292

Table 23.1 (continued)

Table 23.1 (continued)

Transactions and other flows, stocks and balancing items	Liabilities							Goods and service (uses)	Total
	S.11 Non- financial corpo- rations	S.12 Finan- cial corpo- rations	S.13 General govern- ment	S.14 House- holds	S.15 NPISHs	S.16 Total eco- nomy	S.1 Rest of the world		
Non-financial assets									
Produced assets									
Non-produced assets									
Financial assets/liabilities	1 817	3 384	687	289	121	6 298	297		6 595
Net worth	4 121	268	1 300	4 352	375	10 416	276		10 692
Total changes in assets									
Non-financial assets									
produced assets									
non-produced assets									
Financial assets/liabilities	155	285	176	33	28	677	91		767
Changes in net worth, total	216	10	2	276	31	535	-34		501
Saving and capital transfers	66	5	-40	178	21	230	-38		192
Other changes in volume of assets	17	-4	2	2	0	17	0		17
Nominal holding gains (+)/losses (-)	134	10	38	96	10	288	4		292
Non-financial assets									
produced assets									
non-produced assets									
Financial assets/liabilities	1972	3 669	863	322	149	6 975	388		7 362
Net worth	4 337	278	1 302	4 628	406	10 951	242		11 193

Balance sheets

Assets

Accounts	Total	Goods and service (res.)	Rest of the world	S.1 Total eco- nomy	S.15 NPISHs	S.14 House- holds	S.13 General govern- ment	S.12 Finan- cial corpo- rations	S.11 Non- finan- cial corpo- rations	Code
IV.1. Opening balance sheet	9 922		0	9 922	324	2 822	1 591	144	5 041	AN
	6 047			6 047	243	1 698	1 001	104	3 001	AN.1
	3 875		0	3 875	81	1 124	590	40	2 040	AN.2
	7 365		573	6 792	172	1 819	396	3 508	897	AF
										B.90
IV.2. Changes in balance sheet ⁶	482		0	482	25	110	56	1	290	AN
	289			289	21	61	25	-1	182	AN.1
	193		0	193	4	49	30	2	108	AN.2
	787		57	730	33	199	123	294	81	AF
										B.10
										B.10.1
										B.10.2
										B.10.3
IV.3. Closing balance sheet ⁶	10 404		0	10 404	349	2 932	1 647	145	5 331	AN
	6 336			6 336	264	1 759	1 026	103	3 183	AN.1
	4 068		0	4 068	85	1 173	620	42	2 148	AN.2
	8 152		630	7 522	205	2 018	519	3 802	978	AF
										B.90

⁶ Differences between data on individual items and totals of holding gains/losses may not be entirely consistent due to rounding errors.

difference between the values in the opening and closing balance sheets is entirely accounted for within the System, provided, of course, that the assets and liabilities recorded in the balance sheets are valued consistently with the transactions and other changes—that is, at current prices.

. . . .

XI. THE FINANCIAL ACCOUNT

A. Introduction

11.1. The financial account records transactions that involve financial assets and liabilities and that take place between institutional units and between institutional units and the rest of the world.² The left side of the account (Table 23.2³) records acquisitions less disposals of financial assets, while the right side records incurrence of liabilities less their repayment. Net incurrence of liabilities less net acquisition of financial assets is equal in value, with the opposite sign, to net lending/borrowing, the balancing item in the capital account. In the SNA, financial assets are classified under seven major categories (the full classification is presented in Table 23.3):

- F.1 Monetary gold and special drawing rights (SDRs)
- F.2 Currency and deposits
- F.3 Securities other than shares
- F.4 Loans
- F.5 Shares and other equity
- F.6 Insurance technical reserves
- F.7 Other accounts receivable/payable.

Depending upon whether they are assets or liabilities of the unit or sector in question, these categories are listed on both sides of the financial account.

11.2. This chapter addresses five issues (a) the role of the financial account within the SNA; (b) the nature of financial transactions and special cases; (c) the accounting rules for financial transactions; (d) the classification of financial transactions; and (e) detailed flow-of-funds accounts.

B. The Role of the Financial Account

11.3. The financial account is the second of the accounts that deal with accumulation. From the opening of the accounting period to the close, all balance sheet changes involving financial assets and liabilities must be accounted for by financial transactions (described in this chapter) and by other changes in the volume of financial assets and revaluations covered in chapter XII. The financial account is also the final account, in the full sequence of accounts, that records transactions between institutional units. The financial account does not have a balancing

item that is carried forward to another account, as has been the case with all accounts previously discussed. Rather, the net balance of the financial account is equal in magnitude, but with the opposite sign, to the balancing item of the capital account.

11.4. Net saving is the balancing item of the use of income account, and net saving plus net capital transfers receivable/payable can be used to accumulate non-financial assets. If they are not exhausted in this way, the resulting surplus is called net lending. Alternatively, if net saving and capital transfers are not sufficient to cover the net accumulation of non-financial assets, the resulting deficit is called net borrowing. This surplus or deficit, net lending or net borrowing, is the balancing item that is carried forward from the capital account into the financial account.

11.5. Some sectors or subsectors are net lenders while others are net borrowers. When institutional units engage in financial transactions with each other, the surplus resources of one sector can be made available, by the units concerned, for the use of other sectors. The financial account indicates how deficit, or net borrowing, sectors obtain the necessary financial resources by incurring liabilities or reducing assets and how the net lending sectors allocate their surpluses by acquiring financial assets or reducing liabilities. The account also shows the relative contributions of various categories of financial assets to these transactions.

11.6. In the financial account example, Table 23.2, the pattern of sector net lending/borrowing can be seen clearly. General government, non-financial corporations, and the rest of the world have a deficit or net borrowing requirement, while households, financial corporations, and nonprofit institutions have surpluses or net lending capacity. The non-financial corporation sector net borrowing requirement of 69 is shown to be financed by incurring liabilities of 140 and acquiring financial assets of 71; the difference between the two equals net borrowing. Similarly, the household sector, which has a net lending balance of 148, achieves this result by acquiring financial assets of 181 and incurring liabilities of 33. The financial corporations sector has a net lending balance of 5, which is financed by incurring liabilities of 232 and acquiring financial assets of 237. In comparison with other sectors, financial corporations will generally have small amounts of net lending/borrowing. However, their transactions in financial assets and liabilities will be comparatively large, as a reflection of their primary role of intermediating between other borrowers and lenders by incurring liabilities and acquiring financial assets. Net borrowers can transact directly with net lenders. For example, governments can issue securities in the market; these securities can be purchased by households, non-financial corporations, and the rest of the world. In many other cases, financial intermediaries have as their special function the creation of a financial market that indirectly links lenders and borrowers by incurring liabilities to net lenders through taking deposits or issuing securities and providing the financial resources thus mobilized to borrowers. An examination of the financial transac-

Table 23.2

Account III.2: Financial Account

Changes in assets										Changes in liabilities and net worth									
	S.1	S.15	S.14	S.13	S.12	S.11				S.11	S.12	S.13	S.14	S.15	S.1				
	Total	eco- nomy	NPSHs	House- holds	General govern- ment	Finan- cial corpo- rations	Non- finan- cial corpo- rations	Transferees and balancing items	Net lending (+)/Net borrowing (-)		Non- finan- cial corpo- rations	Finan- cial corpo- rations	General govern- ment	House- holds	NPSHs	Total	eco- nomy	House- holds	General govern- ment
	691	641	32	181	120	237	71				140	232	170	33	28	603	88	691	
	130	119	12	68	7	15	17				130	2	2	2	2	132	2	130	
	37	34	2	10	2	15	5				35	35	2	2	35	2	37		
	64	62	7	41	4	10	10				63	2	2	2	65	2	64		
	29	23	3	17	1	2	2				32	32	3	3	32	3	29		
	143	138	12	29	26	53	18				6	53	64	123	20	143			
	56	54	2	22	11	4	15				2	34	15	51	5	56			
	87	84	10	7	15	49	3				4	19	49	72	15	87			
	254	244	5	45	167	27	27				71	94	28	24	217	37	254		
	86	83	3	63	16	16	16				16	32	11	17	76	10	86		
	168	161	2	44	104	11	11				55	62	17	7	141	27	168		
	46	44	3	36	3	2	2				26	13	4	4	4	46			
	36	36	36	36	36	36	36				36	36	36	36	36	36	36		
	33	33	33	33	33	33	33				33	33	33	33	33	33	33		
	22	22	22	22	22	22	22				22	22	22	22	22	22	22		
	11	11	11	11	11	11	11				11	11	11	11	11	11	11		
	3	3	3	3	3	3	3				3	3	3	3	3	3	3		
	82	61	8	40	6	7	7				37	10	5	52	30	82			
	36	18	11	11	1	6	6				8	6	4	18	18	36			
	46	43	8	29	5	1	1				29	4	1	34	12	46			

1 The following memorandum items related to the elements of the category F.2 "Currency and deposits":

m11 denominated in national currency m12 denominated in foreign currency

m21 liability of resident institutions m22 liability of rest of the world.

2 Memorandum item: F.m. Direct foreign investment.

Table 23.3

Classification of Transactions in Financial Assets and Liabilities

F.1.	Monetary gold and SDRs
F.2.	Currency and deposits
F.21	Currency
F.22	Transferable deposits
F.29	Other deposits
F.3.	Securities other than shares
F.31	Short-term
F.32	Long-term
F.4.	Loans
F.41	Short-term
F.42	Long-term
F.5.	Shares and other equity
F.6.	Insurance technical reserves
F.61	Net equity of households in life insurance reserves and in pension funds
F.611	Net equity of households in life insurance reserves
F.612	Net equity of households in pension funds
F.62	Prepayments of premiums and reserves against outstanding claims
F.7.	Other accounts receivable/payable
F.71	Trade credit and advances
F.79	Other
Memorandum item:	
Direct foreign investment	
	Equity
	Loans
	Other

Notes—The recommended breakdown of items F.2, F.3, and F.4 into (a), (b), or (c) is optional. F.3 may also optionally be subdivided between securities other than shares, excluding financial derivatives, and financial derivatives.

This provides the classification for both transactions in financial assets and liabilities and holdings of financial assets and liabilities in balance sheets.

tions of the subsectors of the financial corporations sector, in addition to those of the consolidated financial sector, is often useful.

11.7. It is important to note that, for each institutional sector, the financial account indicates the types of financial assets utilized by that sector to incur liabilities and acquire financial assets. The financial account does not, however, indicate to which sectors the liabilities are incurred and on which sectors the assets indicate financial claims. A more detailed and complex analysis of financial flows between sectors is discussed in the final section of this chapter. This analysis illustrates debtor/creditor relationships by type of financial asset.

11.8. In the hypothetical case of a closed economy in which resident institutional units do not engage in transactions with non-residents, the total net lending and total net borrowing of the various sectors would have to be equal since the net borrowing requirements of deficit sectors would be met by net lending of surplus sectors. For the economy as a whole, net lending or borrowing would have to be zero. When residents engage in transactions with non-residents, the sum of the net lending and net borrowing of each of the sectors making up the total economy must equal the economy's net lending to, or borrowing from, the rest of the world. In Table 23.2 the total economy has acquired financial assets of 641 and incurred liabilities of 603. Net lending of the total economy to the rest of the world is therefore 38.

Counterparts of Financial Transactions

11.9. While some entries in the financial account have counterparts in other accounts of the SNA, other entries take place entirely within the financial account. In the SNA, most transactions involving the transfer of ownership of a good or non-financial asset, or the provision of a service or labour, entail a counterpart entry in the financial account. This most often takes the form of the exchange of goods, assets, and services for means of payment or claims on future means of payment. As the SNA records transactions on an accrual basis, any transaction expected to lead to eventual payment, either in financial assets or in kind, has a counterpart in the financial account. Even transactions in kind, such as barter sales and transfers in kind, lead to entries in the financial account when all elements of the in-kind transaction are not completed simultaneously.

11.10. The sale of a good, service, or non-financial asset may have as its counterpart a change in currency or transferable deposit. Alternatively, the counterpart may be reflected in the financial account in a trade credit or other account receivable/payable. In certain cases, a transaction may have its counterpart in other types of financial assets, such as the provision of fixed assets for long-term indebtedness, and the liability may be evidenced by a loan or security. Thus, counterparts involving changes in financial assets are recorded in the financial account for most transactions recorded in other SNA accounts.

11.11. However, in the SNA, many transactions take place entirely within the

financial account. Transactions limited to the financial account occur whenever one financial asset is exchanged for another or when a liability is repaid with an asset. For example, trade credits are extinguished by exchanging means of payment. The claim represented by the trade credit no longer exists when the debtor provides means of payment to the creditor. The resulting four entries in the financial account are (a) the creditor reduces his holdings of trade credits and increases his means of payment (currency or transferable deposits); and (b) the debtor reduces his liabilities (in the form of trade credits) and reduces his financial assets (in the form of means of payment).

11.12. When existing financial assets are exchanged for other financial assets, all entries take place in the financial account and only affect assets. For example, if an existing bond is sold by one institutional unit to another on the secondary market, in his financial account, the seller reduces his holdings of securities and increases equally his holdings of means of payment. The purchaser makes the opposite entries in his financial account. When a new financial asset is created through the incurrence of a liability by an institutional unit, all related entries may also be made in the financial account. For example, a corporation may issue short-term securities in exchange for means of payment. The financial account of the corporate sector accordingly shows an increase in liabilities in the form of securities and an increase in financial assets in the form of means of payment; the financial account of the purchasing sector shows a recomposition of financial assets—reduction in means of payment and an increase in securities. Transactions that are wholly within the financial account involve the exchange of one asset for another or the simultaneous creation or reduction of both assets and liabilities. These transactions change the distribution of the portfolio of financial assets and liabilities and may change the totals of both assets and liabilities, but they do not change the difference between total financial assets and liabilities.

F. Detailed Flow-of-Funds Accounts

11.103. The financial account, as presented in Table 23.2, records the net acquisition of financial assets and net incurrence of liabilities for all institutional sectors by type of financial asset. For each sector, the financial account shows the financial liabilities that the sector incurs to mobilize financial resources and the financial assets that the sector acquires. The financial account thus presents a two-dimensional view of financial transactions—the financial asset or liability involved in the transaction and whether the transaction involves an asset or a liability. This information is very valuable in identifying the financial liabilities that net borrowing sectors use to finance their deficits and the assets that net lending sectors use to allocate their surpluses. Although the movement of financial flows can be mapped at this level of recording, the question of who is financing whom is not answered. In Table 23.2, it is clear that non-financial corporations incurred

liabilities of 140 predominantly in the form of loans (71) and shares and other equity (26). Financial corporations incurred net liabilities of 232 by using the full range of financial instruments. While the instrument by which the liabilities are incurred is clearly presented in this account, it is not possible to identify the sector that is providing the funds. Similarly, the net acquisition of financial assets cannot be tracked. Households acquired a net of 181 spread across a range of assets, while financial corporations acquired net financial assets of 237, mostly in the form of loans and securities. However, it cannot be determined from this level of recording to which sectors the financing is being provided.

11.104. For a full understanding of financial flows and the role they play in the economy, it is often important to know more detailed financial relationships between sectors and the financial assets by which these relationships are carried out. For example, it is often important for the government to know not just what types of liabilities it is using to finance its deficit but also which sectors (or the rest of the world) are providing the financing. For financial corporations (and those supervising them), it is important to know not only the composition of financial assets (loans and securities) that they have acquired but also which sectors these are claims upon. In addition, it is often necessary to analyze financial flows between subsectors within a sector (central government financial transactions with local governments or central bank financial transactions with depository institutions) and across sector boundaries (changes in depository institutions' claims on public non-financial corporations). Such detailed information is necessary to understand how financing is being carried out and how it is changing over time.

11.105. This more detailed approach is particularly important in spelling out the role that financial intermediaries play in financial transactions. As was previously noted, financial corporations often have very small net lending or borrowing balances in comparison with their volume of transactions in both financial assets and liabilities. This reflects the basic role of financial intermediation of mobilizing financial resources through certain financial transactions and making these financial resources available to other sectors in forms suitable to these sectors through maturity/asset transformation. Thus, financial corporations play a critical role in directing financing flows from net lending sectors to net borrowing sectors and allow lenders to choose their asset instruments and borrowers their forms of indebtedness.

11.106. To facilitate the more detailed financial analysis just described, the SNA contains two Detailed Flow-of-Funds tables.⁴ One records transactions in assets cross-classified by type of asset and by the debtor sector. The sectors transacting in assets are shown horizontally across the top of the table while the type of asset, disaggregated by sector of debtor, is arrayed vertically. The other records transactions in liabilities cross-classified by type of liability and by the creditor sector. Since all financial assets other than monetary gold and SDRs have an asset/liability symmetry, it would be conceptually possible to present all

debtor/creditor relationships in a single table but this would require a table of very many cells, many of which would be blank. The tables, as presented, are merely examples of the type of detail that a country may wish to develop. They identify the full sectors for households, nonprofit institutions, general government, and non-financial corporations. Subsectors are shown for the financial corporations to emphasize the special role these units play in financial transactions. For particular analysis or policy purposes, it may be useful to break down the other sectors into subsectors as well. In many circumstances, it will be necessary, for example, to identify financial transactions of central government or of non-financial public corporations. The sector breakdown under each type of financial asset is suggestive rather than prescriptive. For securities and loans, it is suggested to identify the debtor sectors as follows: non-financial corporations, financial corporations, central government, state and local government, other resident sectors, and the rest of the world. Alternative breakdowns are illustrated for other types of assets.

11.107. These more detailed flow-of-funds tables can be used in at least three important areas related to economic policy. Data from these tables can be used in economic analysis and description of activity and trends in current periods. They can be used as an aid to projections in the context of the development of economic plans or to assess the effect of current economic policies, or changes in them, on the future path of the economy. They can also be used in projects that undertake modeling of the economy to study economic behaviour as an aid to the formulation of economic policy. Such studies, of course, would be complementary to similar work on data from other accounts in the SNA. In particular it is useful, when using the flow-of-funds accounts to facilitate the operation of the financial system in the economy, to relate these transactions to the behaviour of the non-financial economy. The capital and financial accounts provide these links between the "real" economy and financial activity. Similarly, the flow-of-funds accounts facilitate study of the saving/investment process, by tracing the channels by which saving reaches ultimate borrowing, after passing through various financial institutions and assets.

11.108. In the policy area, a few examples will illustrate the usefulness of these tables. Common policy problems faced by many nations include questions such as: Will foreign exchange reserves be adequate? How will the central government's deficit be financed? How will the major non-financial public corporations be financed and by whom? In each of these examples, the provision of answers to the questions requires an impact analysis on various sectors and types of transaction. The articulation of the accounts within the flow-of-funds table facilitates the analysis and provides a framework in which to assess the answers.

11.109. In the area of financial projects, the use of time-series from relevant parts of the flow-of-funds tables enables an examination of the implications of parts of an economic plan, including testing for consistency of a number of separately prepared sector or market forecasts, and the implications for future

financial transactions of a particular set of assumptions about future events (e.g., interest rates, exchange rates, growth, sector surpluses/deficits).

11.110. Other policy areas where these projections and studies can be of assistance are in considering the long-term development of financial markets and institutions in the economy and assessments of the need for new types of assets to satisfy the potential demand of savers and investors requiring access to reliable liquid assets.

11.111. The Detailed Flow-of-Funds tables should be interpreted as a general model, and substantial flexibility should be allowed in specific country circumstances. In many countries, the dimensions of the tables will be severely constrained by data availability. It should also be noted that these tables are extensions of the basic financial account and that adding the third dimension to the analysis can be done on a selective basis by identifying particular assets or sector (or subsector) relationships for which this level of detail would be useful.

Notes

1. [Following this description an arithmetic illustration of the sequence of accounts is presented here in Table 23.1. This table is from *System of National Accounts 1993*, appendix to chapter II, Table 2.8.—Ed.]

2. Except when the context requires, the term "financial assets" should be read to include liabilities. The terms "financial assets" and "liabilities" are used to designate those financial instruments for which there are transactions in the financial account; the term "financial instrument" is broader in coverage than "financial asset" as it includes various financial contracts and other arrangements, such as contingencies, that are not actual assets.

3. Table 11.1 in SNA 1993.

4. These tables, 11.3a and 11.3b in SNA 1993, are not included here.—Ed.

BANK FOR INTERNATIONAL SETTLEMENTS ET AL.

Harmonization: International Debt Stocks and Flows

(1994)

Introduction

Developed countries have been providing financial assistance to countries in earlier stages of development for nearly half a century. The measurement of the flow of external resources is essential for the formation of development strategies and the evaluation of assistance programmes. Up-to-date, accurate data on debt and financial flows in turn facilitate the measurement of resource flows. The debt component of resource flows is the focus of this report.

The report extends the discussion of stocks of external debt contained in an earlier report¹ by focusing on the ways in which stock data enter into the analysis of the flow of external resources between creditor and debtor countries. The sponsoring institutions, cooperating in the International Working Group on External Debt Statistics (IWGEDS), are the Bank for International Settlements (BIS), the International Monetary Fund (the Fund), the Organization for Economic Co-operation and Development (OECD), The World Bank and the Berne Union.

During the 1970s many countries began accumulating large amounts of external debt. In the early 1970s, a significant part of external economic assistance took the form of official financing, including official support of export credits. By the late 1970s, the emphasis had shifted towards financing provided by

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private creditors, notably commercial banks, which began to recycle petrodollars by lending large amounts to developing countries at low nominal interest rates. As a result, developing countries acquired a growing proportion of short-term debt and it became necessary to extend the compilation of debt data beyond the usual long-term financing items. Many of these short-term loans financed uneconomic projects. Others financed balance of payments deficits which countries should have addressed with more prudent economic policies instead of increased borrowing. A dramatic change in the emphasis on debt-financed economic assistance came in 1982, when Mexico announced that it was unable to meet its current debt servicing obligations. This action led to the realization that the accumulated debts of many developing countries had reached a magnitude that threatened the stability of the international financial system. At that stage, and in the negotiation process that followed, the compilation of accurate data on outstanding debts became critically important.

Four of the multilateral organizations that are members of the IWGEDS² play a significant role in gathering and maintaining information on external debt and resource flows which serves as source data for external debt analysis. These organizations and the broad objectives of their data systems for monitoring external debt are the following:

Bank for International Settlements (BIS). The BIS aggregates data collected by official monetary institutions on the international assets and liabilities of commercial banks. It evaluates changes in financial positions in order to meet the needs of its member central banks for information relevant to monetary policy, prudential regulation and general economic analysis. The BIS also gathers data on international bonds, Euronote issues and certain derivative instruments. Much of this information is published in the BIS quarterly report *International banking and financial market developments*.

International Monetary Fund (the Fund). The emphasis of the Fund is on gathering accurate information on the overall financing of the balance of payments of developing countries. This is part of the Fund's responsibility for compiling and analyzing global balance of payments data. It also compiles debt data in the course of consultations with individual member countries. Furthermore, the Fund combines BIS banking data with data from other sources and publishes international banking statistics.

Organization for Economic Co-operation and Development (OECD). The OECD focuses on a comprehensive measurement of official and private resource flows to developing countries, the countries of Central and Eastern Europe (CEECs), and the newly independent states of the former Soviet Union (NISs) in support of its Development Assistance Committee (DAC) and Centre for Co-operation with Economies in Transition (CCET). Towards this objective, the OECD provides "DAC" statistics which include data it receives through the DAC and Creditor Reporting Systems.

World Bank. The Bank, as a major creditor, maintains a full record of the external debt of its member countries. It also compiles data on the total flow of external capital to developing economies for use in economic analysis.

The above institutions regularly produce a variety of reports on the subject of external debt, as well as more general analyses of international financial developments. Recognizing the need for dialogue to reconcile differences in debt compilation systems, the four institutions and the Berne Union formed the IWGEDS in 1984. In 1988, the IWGEDS published a report which discussed the definition of external debt, its statistical coverage and the methodology for its analysis. The present report takes this discussion further and considers the ways in which external debt enters into analyses of the flow of external resources between creditor and debtor countries.

Main Elements of Stock and Flow Reconciliations

This section is primarily concerned with the reconciliation of data on stocks of external debt with data on flows of capital or resources in the reporting systems of the member organizations of the IWGEDS. Information on outstanding stocks of debt is important for many analytical purposes, including the understanding of the evolution of debt burdens over time. But the basis for most analyses of current economic developments affecting developing countries, burden-sharing by creditor countries and shifts in the type and sources of financing is information on gross and net resource flows. There may be variations in the definitions and measurement of resource or capital flows. These concepts involve flows other than those discussed in this report, such as direct investment or unrequited transfers, particularly the grant component. It is therefore important to have the capability to refine debt data to yield agreed measures of the provision of resources, excluding factors that merely affect the stated value of debt stocks.

The relative significance of different types of adjustment to reconcile debt stocks and flows depends on the configuration of each of the four systems. Both the OECD Creditor Reporting System and the World Bank Debtor Reporting System collect and publish comprehensive and detailed information on debt stocks and debt flows. In principle, they can fully integrate their stock and flow figures because they collect or prepare their own estimates for non-flow factors. By contrast, the BIS bases its system for bank activities primarily on end-of-period position data, but information on the currency composition of assets and liabilities makes it possible to prepare estimates of stock changes, taking into account the exchange rate adjustment. The Fund's position is mixed. Although the Fund systematically collects relevant flow data when compiling countries' balance of payments statistics, not all countries compile a statement of their international investment position. There are

opportunities for relating stocks to flows, but only for those countries that provide both sets of data.

The OECD and World Bank receive detailed reports from creditor and debtor countries respectively on a major portion of the debt outstanding, and add information from other data sources in order to construct a comprehensive picture of each country's external debt. For BIS banking data, there is no adequate source of data for verifying the accuracy of the estimates of flows derived from stock data. From the Fund's point of view, the accurate measurement of flows is a principal concern. But the Fund is increasingly recognizing that the compilation of international investment position data (especially when based on sources different from the flow data) provides an important means of evaluating the accuracy of the flow data. Indeed the international investment position data are sometimes the only source for quantifying flows that, for one reason or another, are omitted from countries' balance of payment returns to the Fund.

There is a further dimension in the case of the Fund—the relationship between reported data on capital flows and reported data on the current account, both for individual countries and for regional and global aggregates. A comparison can be made between the capital flow balance and the current account balance for each country; in principle, the amounts of these balances should be equal but with opposite signs. Any large discrepancies between the current and capital account balances may indicate problems with the data. These discrepancies can serve as the basis for a review of the debt flows and other transactions being reported in the international accounts.

Many of the problems in reconciling stocks and flows are common to all compilers of debt data. The subsections below identify the major reconciliation elements and their general characteristics and provide a description of how each compiling institution, in principle, handles them.

Exchange Rate Conversions

In all of the compilation systems it is necessary first to convert data received in a variety of currencies to a common numeraire, which is usually the U.S. dollar. Second, it is important to reconcile the value of outstanding stocks of assets and liabilities, at given dates, with the value of the intervening accumulated reported (or estimated) transactions data. In the case of loans which creditor and debtor countries report to the Fund, the OECD and the World Bank, these concern, respectively, disbursements and repayments. Creditors and debtors also provide data to the OECD and the World Bank on outstanding balances at the end of each period. The Fund receives aggregate debt stock data from some countries as part of their international investment position statements.

Flow data are usually converted into U.S. dollars using the appropriate *aver-*

age exchange rate for the period, while the stock of debt is evaluated using the exchange rates prevailing at the *end of each period*. When estimating net flows from debt stock figures, the change in debt between two end-of-period reporting dates produces a distorted estimate of net flow, reflecting differences in the exchange rates used. It is possible to eliminate this effect by reconverting the data into national currencies, calculating the change in debt stocks and reconverting the result into U.S. dollars at the average exchange rate for the period. The above information is available for individual transactions. It is also available, albeit in less detail, for guaranteed private export credits, for which the data on flows and stocks relate to aggregates of sets of transactions.

It is necessary to allow for differences between the currency in which data are presented and the currency of the transaction. If there are variations in the U.S. dollar exchange rate for converting non-dollar transactions, the U.S. dollar amount of debt will change, creating an apparent flow even if none has taken place. This can cause difficulties in reconciling data on debt stocks and debt flows. For example, a debt of DM300 will appear as US\$200 if the exchange rate is US\$1 = DM1.50. But if the DM rate has declined to US\$1 = DM2, the same debt will appear as US\$150. In the absence of information on the original transaction in DM, a debt data compiler may conclude, on the basis of the U.S. dollar debt figure, that a repayment of US\$50 has taken place. Similarly, in using flow data to estimate outstanding debt, a loan of DM300 which appears as a gross disbursement when the exchange rate was US\$1 = DM2 will raise the amount of debt outstanding (*ceteris paribus*) by US\$150. But if at the end of the period the exchange rate is US\$1 = DM1.50, there will be an apparent increase in the debt of US\$200, against a reported flow of US\$150.

BIS data on bank credits relate only to stocks, but estimates are made of "flows" that result from changes in stocks over given periods. The BIS publishes independently, and jointly with the OECD,³ estimates of the exchange rate adjusted changes in bank claims which are obtained by, first, calculating the U.S. dollar equivalent of the stock of debt at the start of each period, using the exchange rates prevailing at the end of the period, and, second, comparing the result with the end-of-period total obtained using the same exchange rates. This procedure immediately identifies the amount by which claims would have risen (or fallen) had there been no changes in the exchange rate during the period. It is possible to attain reasonable accuracy with this procedure since most reporting countries disaggregate their claims on each individual borrowing country into a minimum of four and sometimes as many as nine major currencies plus the ECU.

A relatively new factor that may complicate the available information on the currency composition of debt stocks and flows for a given country is the growing use of currency swaps. With this device, the creditor or debtor may

arrange to shift the currency in which it makes payments of principal or interest, in order to minimize, or lock in, the amount of potential loss or gain that may arise when there are fluctuations between the national currency and the currency of repayment of the particular debt. In such a case, the available record of the currency of repayment may no longer be accurate. It may be noted that in the fifth edition of the *Balance of Payments Manual* derivative instruments such as currency swaps appear as separate, reportable financial instruments.

Members of the IWGEDS treat exchange rate conversions in several ways. In reporting capital flows to the Fund, for example, countries may express their flow statements in whatever unit of account they have adopted for their own use. The fourth edition of the *Balance of Payments Manual* recommends, in principle, the use of the exchange rate prevailing at the time of the contract as the basis for conversion. However, for practical purposes, the *Balance of Payments Manual* recognizes that the foreign exchange rate prevailing at the time of the contract may not be available, and consequently suggests the use of an average of the market rates that prevailed during the period in which the transactions occurred. When deriving flow statistics from stock data, the Fund recommends a procedure similar to that of the BIS.

In the Debtor Reporting System, the usual currency for reporting is that in which the debts are repayable or in which transactions took place. As a result, the loan-by-loan data are maintained in diverse currencies. The flow figures, that is, disbursements and debt service payments, are converted into U.S. dollars using average exchange rates for each currency during the period in which the transaction took place. Stock figures are converted into U.S. dollars using the exchange rate in effect at the end of the period.

The member countries of the DAC report their DAC flow statistics to the OECD in U.S. dollars, noting the exchange rates applied to convert the data they maintain in their national currency into U.S. dollars. The data which reporting countries supply to the Creditor Reporting System are normally in national currencies, with a note of the currency of repayment, or the currency of the claim, in cases where this currency is different from the national currency. When two or more currencies are involved, which is rare, the reporting instructions require conversion of the amounts into a single currency using the average rate for the period that applies to the reporting to the DAC or, if this rate is unknown, the most representative average rate available.

It should be added that an increase in the U.S. dollar equivalent value of outstanding debt does not signify an increase in the debt servicing burden. If the currency of the indebted country is appreciating, the gains in its terms of trade will reduce the future real burden of debt servicing. If the debt is repayable in currencies that are neither the U.S. dollar nor the local currency and these currencies appreciate against the U.S. dollar, the effect on the debtor will depend on the currency composition of its international transactions. In either case, exchange

rate changes in the future may greatly change the implication of the current measurement of a country's debt.

Changes in Market Value

In addition to changes that occur as a result of exchange rate fluctuations, movements in market prices can also cause problems in comparing reported values. Changes in market value can affect both the derivation of flows from stocks and the comparison of data reported by both creditors and debtors. This issue does not normally arise for government-to-government credits. It does, however, arise in the case of debt which is tradable in the market, such as securities and some bank loans, and is further complicated by debt-for-equity swaps or unilateral action by debtors or creditors.

Large changes in the market valuation of bank lending may also occur. Information on bank claims is provided by the BIS data, which both the OECD and the World Bank use. To the extent that banks adjust the reported amounts of claims that they regard as marketable to the current value of each asset in the market, these apparent debt stock changes must be eliminated to arrive at both a true nominal debt stock figure and a "flow" figure. Moreover, the adjustments made by creditor banks may not appear in the accounts of debtor countries, so that the two sets of data can give conflicting *prima facie* indications of movements in bank claims on developing countries. The amounts that banks report for statistical purposes may also differ from other accounts they maintain to comply with regulatory or tax requirements. Thus, banks may adjust the book value of assets to reflect market changes or regulatory requirements but may not necessarily carry through such changes to the reports they provide to statistical agencies.

There is some active trading of bank claims in the market. If a reporting bank sells a claim to a non-reporter, the debt of the issuing country will show a decrease in creditor-based statistics. If a reporting bank sells a claim to another reporting bank, the aggregate data will show a decline in the holdings of the seller and an increase in the holdings of the buyer. The two transactions will only cancel out if, by rare coincidence, the price obtained by the seller was the price at which he was carrying the claim on his books. Because of these features, differences in debt stocks may give a distorted estimate of net flow in a period in which there has been a large volume of activity or change in prices in the secondary markets.

Individual agencies have different approaches to the market valuation problem. In the balance of payments statistics, the basis of capital flow entries and stock data should be, and usually is, the market prices of the financial transactions concerned. The concept of market prices in the *Balance of Payments Manual* is the same as that in *1993 System of National Accounts*: the amount of money that a willing buyer pays to acquire something from a willing seller,

given that the two parties making the exchange are independent entities that base their decisions solely on commercial grounds. For financial items traded on organized markets including debt of developing countries traded in secondary markets, the price established in the market meets this definition. For non-marketable financial items, primarily loans, the imputed market price is the face value. In practice, most debtor countries report data at face value.

The Debtor Reporting System does not address the question of market valuation explicitly. However, for some transactions, such as repayments of bonds or debt repaid or repurchased at other than face value, the *Debtor Reporting System Manual* requires reporting countries to record the actual amount repaid and, in addition, to show, in a footnote, the nominal value of the debt redeemed.

The Creditor Reporting System records loan commitments at their face value. For export credits, the face value is defined as the amount of credit extended, excluding any cash payments made by the buyer. An important point to note is that the Creditor Reporting System records the value of grants as the cost to the donor. This value may or may not correspond to world market prices (see the subsection on debt forgiveness immediately below) or to the value reported by the recipient country. The one significant exception to this rule is food aid grants and loans, which are valued at market prices.

Debt Cancellation or Forgiveness

In this subsection the following paragraphs consider situations in which debt is reduced or eliminated by mutual agreement between two parties. When such an agreement eliminates all or part of the outstanding debt or debt service, it becomes a transaction, which should appear in financial records as a resource flow. The annual effect of the cancellation is measured by the principal and interest payments, other than future interest payments, that would otherwise have been due. Balance of payments statistics, World Bank data and OECD statistics on the flow of resources to developing countries use this convention. In stock data, when debt cancellation becomes effective, there is an immediate withdrawal of the full amount of outstanding debt from the record.

A reconciliation between stocks and flows requires full information on the status of each cancelled loan when the cancellation occurs. Since no movement of funds has taken place, it is necessary to make a counter-entry, that is, an imputed flow, to retain the relationship between the change in debt stocks and the flow figures. This principle applies to debt reorganization in general, and, more specifically, to refinancing and rescheduling.

In the balance of payments context, debt forgiveness occurs when a creditor forgives all or part of a debtor country's debt. The accounting for debt forgiveness differs according to the period in which the now-forgiven debt service obligations were originally due. For forgiveness of obligations past

due, that is, when arrears are forgiven, the accounting for the debtor country reflects a reduction in arrears which is recorded as a debit in the capital account and a credit under unrequited transfers. Forgiven interest due in the current period is recorded as a debit under investment income. For the forgiveness of principal due in the current period, the accounting reflects a decrease in liabilities associated with an existing loan and is recorded as a debit in the capital account and a credit under unrequited transfers. In the case of forgiveness involving obligations not yet due, a credit entry appears under unrequited transfers for the amount of outstanding principal, not including future interest. Since future principal payments forgiven do not constitute an obligation for the current year, no exceptional financing entry is required for balance of payments purposes. Exceptional financing is defined as financing obtained to meet a balance of payments financing need. Attachment IV [not included here—Ed.] provides information on the components of exceptional financing.

In the Debtor Reporting System, as in the balance of payments, debt forgiveness occurs when a creditor forgives all or part of a debtor country's debt. The full amount of the outstanding debt forgiven is withdrawn from the record of debt outstanding and treated as an adjustment to the stock of debt. A counter-entry or imputed flow is recorded for principal in arrears, principal due in the current year, the sum of future principal payments, interest in arrears and interest due in the current year. As a result, the effect of the debt forgiveness on both stocks and flows is clearly identified in the Debtor Reporting System, and a reconciliation with balance of payments data is possible.

In the OECD debt forgiveness consists of a creditor's renunciation, in agreement with the debtor country, of a legally enforceable claim in respect of one or more maturities of principal and interest giving rise to a grant from the creditor to the debtor. When debt forgiveness is granted for the purpose of promoting the development or welfare of the recipient, it is recorded as an ODA grant. Cancellation of debt by the official sector that is not eligible for inclusion in ODA is recorded as a grant in the category other official flows.

In debt stock statistics, the full amount of outstanding debt (principal and arrears of interest) cancelled is subtracted immediately from the outstanding amount, whereas in flow statistics only the forgiveness of the amount of principal and interest due or in arrears are recorded immediately; forgiven amounts of principal and interest due in the future are recorded in the year in which they become due. The forgiveness is recorded as a disbursement of an ODA grant, equivalent to the amount of principal and interest forgiven, with a counter-entry equivalent to the amount of principal forgiven under amortization in the sector of the forgiven loan (ODA, other official flows or private sector). Amounts equivalent to the forgiven interest are also recorded as imputed interest payments. In addition, the full amount forgiven, including the present value of future interest payments foregone (discounted at 10 per-

cent per annum), is reported as a commitment when the forgiveness is agreed. A reduction in the rate of interest charged on a loan is also treated as the forgiveness of interest, giving rise to a grant, with no counter-entry under amortization.

Provisions and Write-offs

A unilateral decision by either the creditor or the debtor to exclude all or part of a debt from the reported accounts can create large discrepancies between debt data reported by creditors and debtors, since such an action affects the reporting of only one of the two parties concerned. In the presence of potential losses, creditors may think it prudent to reduce the value of their claims in their accounts. They can do this either by setting up provisions or reserves against possible losses, or by writing the claims off. At an early stage in the estimation of potential losses, creditors are likely to set up reserves rather than change the carrying value of assets. In that case, there is no visible effect on the data entering the debt statistics, either as a stock or as a flow reported by banks or by non-bank creditors, when claims are reported gross of provisions. In most countries, banks report their claims gross of provisions. If the likelihood of potential losses persists, banks, more than other creditors, are likely to reduce the carrying value of their claims directly. This write-down immediately affects the amount of credit outstanding that banks report and therefore requires an adjustment to derive flow data from the BIS stock data on international banking. In the extreme case, when a bank decides to write off the full amount of an unguaranteed claim as irrecoverable, it will omit the amount it previously recorded in its reports, and the data user may infer wrongly that payment has duly been made. On the debtor side, repudiation of debt might cause reported external debt to decline, but this is an infrequent problem. As with a creditor write-off, this unilateral action would in principle not be considered a transaction.

In the balance of payments, when creditors unilaterally adjust their balance sheets through specific or general provisioning in respect of their asset portfolio, a partial (write-down) or total (write-off) removal of a given claim from the balance sheet may occur. These kinds of adjustment are not recorded as transactions in the balance of payments accounts since there has been no contract with another party involved in the claim. Accordingly, there is no recording of provisions, write-downs and write-offs in the balance of payments statistics. Similarly, these types of creditor action do not appear in the Debtor Reporting System since they do not affect the debtor's records. However, the international investment position should take account of such actions to the extent that they reflect changes in the market value of the financial instruments concerned. A reconciliation entry should identify the nature of the change in the value of the outstanding instruments.

Write-offs and write-downs are reflected in both the stock data supplied by the BIS and those reported in the Creditor Reporting System for official loans and officially guaranteed export credits. In the flow statistics creditors may report write-offs by the official sector as other official grants in the same way as debt forgiveness is recorded as an ODA grant. There is no specific provision for reporting private sector write-offs. However, to the extent that data on private flows are based on changes in stocks, a write-off does have an effect. Thus, write-offs enter OECD data but have no effect on the flow data in the Debtor Reporting System or in balance of payments records.

Restructuring

Restructuring covers many types of agreement involving a change in existing debt through rescheduling, refinancing or other arrangements which modify the debtor's obligation to pay principal, interest or both. Setting aside the capitalization of interest, these agreements do not change the principal amount of the debt, but there may be an extension of the repayment schedule or a change in the creditor or debtor sector or type of debt. When interest payments due are part of a restructuring agreement, there is often a provision to add the amount of interest, and, on occasion, penalty interest, to the outstanding principal of the debt.

Refinancing usually transforms one set of loans (or identified portions of a set of loans) into a single loan. The official sector may make a single loan to refinance debts which originally resulted from the acquisition of private export credits. On the recipient side, the repayment obligation may shift from the original importer or debtor to the central bank or a government department which is responsible for transferring the corresponding amount of foreign exchange. These changes appear in the statistical data of creditor countries as an increase in claims on the government and a decrease in claims on the private sector. In each instance, there is a related change in the sectoral debt stock but the aggregate measure of resource flows will not indicate a refinancing unless there is a special entry to record a shift between sectors and facilitate a reconciliation between debt stocks and debt flows. There may also be a sectoral shift in the debtor country if the official sector assumes a private debt. It should be emphasized that the entries made refer to a change in ownership within the boundaries of the creditor or debtor country, and not an international movement of funds. The same principles apply to the rephrasing of maturities of external loans, or "rescheduling" in the technical sense. In this case, however, since the loans remain in existence, the problem of inter-sectoral shifts does not arise.

Rescheduling

In the balance of payments framework, the definition of debt rescheduling is a formal deferment of debt service payments with the application of new maturi-

ties to the deferred amounts. The balance of payments accounting for rescheduling depends on the accounting period in which the debt service obligations fall due. For rescheduling of obligations past due, that is, when arrears are rescheduled, the accounting reflects a reduction of arrears and the creation of a new loan. In the detailed presentation of the *Balance of Payments Statistics Yearbook*, the entries comprise a debit under short-term capital (other liabilities) for the amount of the rescheduled arrears and a credit under long-term capital (drawings on loans received). The aggregate presentation of the *Balance of Payments Statistics Yearbook* records a change in the nature of exceptional financing—i.e., a reduction in arrears financed by a new long-term loan.⁴

For the rescheduling of current obligations, that is, interest and amortization as they fall due, the accounting entries in the detailed presentation of the balance of payments are, for interest, a debit in the current account under other investment income (interest) and, for amortization, a debit in the capital account under short- or long-term capital (repayments on loans received), depending on the maturity of the original loan. Both amortization and interest payments rescheduled appear as a credit under long-term capital in the capital account (drawings on loans received). In the aggregate presentation, the credit is recorded under the exceptional financing category. This accounting framework reflects the reduction of liabilities associated with an existing loan and the creation of a new loan, which appears as a balance of payments financing item.

For the rescheduling of obligations not yet due, entries must reflect the change in maturities. In principle, the entries should reflect the total amount of future obligations rescheduled in the consolidation agreement. However, in the case of a multi-year agreement, a rescheduling of obligations due in the future often depends on the fulfillment of certain conditions when the obligations fall due. In this case, the recommendation for balance of payments accounting is to record entries only in the period after fulfillment of the particular conditions. Because the definition of balance of payments need does not extend to the rescheduling of obligations not yet due, there is no distinction between the entries in the detailed presentation and the aggregate presentation appearing in the *Balance of Payments Statistics Yearbook*. The entries for a rescheduling involving the conversion of a short-term loan into a long-term loan would be a debit under short-term capital and a credit entry under long-term capital. For the rescheduling of a long-term loan, both the credit and debit entries would fall under long-term capital.⁵

Debt rescheduling in the Debtor Reporting System consists of an agreement between the debtor and the creditor to a new schedule of amortization and interest terms, applicable to obligations past due or due during a specified future period. In the compilation and presentation of the debt data there is a distinction between cash flows and imputed flows. Imputed flows reflect rescheduled debt service payments, changes in creditor and debtor status and the shift in liabilities

from one financial instrument to another as a result of rescheduling and are recorded separately in the Debtor Reporting System. Also, in published form, in the *World Debt Tables*, they appear in a special section (Debt Restructuring) to complement the cash-basis information.

The methodology which the Debtor Reporting System has established for recording debt rescheduling differs from the standard methodology for recording these transactions in the balance of payments statistics. In the Debtor Reporting System, maturities rescheduled in the context of a multi-year rescheduling agreement are recorded as they fall due. By contrast, in the balance of payments statistics, unconditional rescheduling of obligations due in the future should appear under the period during which the agreement was signed. However, a conditional rescheduling which affects obligations due in the future is not recorded in the current accounting period but in the period during which the debtor fulfills the necessary conditions. This difference in the accounting rescheduling hampers the comparability of debt-related flows between the *Balance of Payments Statistics Yearbook* and the Debtor Reporting System.

The OECD⁶ defines debt rescheduling (rephasing) as the technique under which legal effect is given to a revised schedule which defers principal and interest payments on one or more loans, each of which retains its identity, while the creditor remains unchanged. The use of the term "multiple rescheduling" occurs when the same creditor incorporates the maturities (including arrears) of more than one loan in a single new loan to the same debtor. For statistical purposes, a multiple rescheduling receives treatment similar to a refinancing loan. In the OECD's debt database, account is taken of the rescheduling (rephasing) by altering the repayment schedule of the particular loans. Reporters are asked to notify the action in their reports to the Creditor Reporting System.⁷

Notes

1. *External Debt: Definition, Statistical Coverage and Methodology*, Bank for International Settlements, International Monetary Fund, Organization for Economic Co-operation and Development and World Bank (Paris: OECD, 1988). Copies (no. 44263, 1988) may be obtained from OECD Publications, 2 rue André-Pascal, 75775 Paris Cedex 16.

2. The Berne Union is also a member of the IWGEDS, but it does not publish data relating to external debt or debt flows.

3. *Statistics on External Indebtedness* (semiannual): Bank and trade-related non-bank external claims on individual borrowing countries and territories.

4. The balance of payments is presented in two formats in the *Balance of Payments Statistics Yearbook*, viz. the detailed and the aggregated presentations. The former shows the balance of payments components according to the standard classification recommended in the Fund's *Balance of Payments Manual* and the latter according to certain analytic concepts. The aggregated presentation identifies, inter alia, exceptional financing, which denotes any other arrangement by the authorities (or by other sectors encouraged by the authorities) to finance balance of payments needs.

5. An agreement that not only includes past and current maturities but also provides for the rescheduling of maturities that will be due in the future.

6. For DAC reporting, the net amounts rescheduled, which include capitalized interest, are reported as a commitment. Since the principal amounts rescheduled were outstanding and remain outstanding, no actual disbursement takes place, while the net flow of principal is zero by definition. Therefore, no disbursement entries are required in respect of rescheduled principal. However, as capitalized interest is a new obligation of the borrower, its amount should be shown as an amount disbursed, typically under the official sector, although private sector credits too may be rescheduled (in the sense of rephasing).

7. [This section continues with similar analyses of refinancing, debt conversion, debt buybacks, arrears, and interest and fees.—Ed.]

Part VI

Uses of the Accounts in Empirical Model Analysis



Introduction to Part VI

One of the more scientific outgrowths of Keynesian economics has been the development of empirical macroeconomic models—that is, the representation of economic behavior in systems of equations that have been statistically fitted to actual economies. Although Keynes himself was a theorist, his models seemed capable of statistical fits, and Keynes, in the 1950s, inspired his followers to move in this empirical direction.

As macroeconomic modeling developed in the ensuing decades, the models in the United States grew in size and complexity. This growth was supported by major improvements in econometric technique and increasingly sophisticated computers. And macroeconomic data resources were expanding as well. Among these resources were the new flow-of-funds accounts. So in the 1960s, when model builders wanted a more elaborate treatment of the financial system in their models, a conjuncture with flow-of-funds analysis was natural. The readings in this Part trace the ensuing developments.

I am not an econometrician. My problem as a practitioner is how to obtain what is useful in this rather academic conjuncture despite my not understanding technically much of its detail. So I have tried to select pieces that would communicate well to practitioners. And I have not hesitated to remove technical econometric or mathematical material where it was not essential to the purpose at hand.

The first selection in Part VI is an early (1958) starting point from the flow-of-funds side. Its model is an accessible one that nevertheless foreshadows later developments. It focuses on the major financial flows in a condensed but formally complete flow-of-funds matrix. The model contains no liquidity preference apparatus; its two interest rates are determined by market supplies and demands for loanable funds. The supply of mortgage funds to consumers is rationed, and this influences new housing expenditures. An exogenous money stock represents Federal Reserve policy. The various sector submodels are simply crude interpretations of the data behavior and do not represent the application of particular economic theories.

On the model-building side the starting point is the Klein-Goldberger model (1955).¹ This model was the first econometric incorporation of the Keynesian

system, containing about twenty simultaneous equations. The financial part of the model was a modest one, grounded in Keynes's liquidity preference theory. There are two liquidity preference equations, one for business and one for households. Also, the model contains both short- and long-term interest rates related by a term structure equation, the long rate being a function of past values of the short rate. As a final alteration of Keynes, the supply of money is represented by excess bank reserves. Despite these changes it is clear that the roots of the model lie close to the Keynesian system, and it has not been included here.²

As we enter the 1960s the stage is set for the meeting of flow-of-funds and the mainstream of macro model building. In 1960 a major project was begun—the Brookings model project—under the direction of James Duesenberry and Lawrence Klein to assemble a large quarterly econometric model of the United States for the analysis of business cycles.³ The work on its financial submodel was headed by Frank de Leeuw, then with the Federal Reserve Board staff. His resulting financial submodel is our second selection.⁴

De Leeuw aims to present in model form a more detailed picture of the operation of the financial system than is provided by the simple liquidity preference system. His strategy is to analyze both the supply and the demand for money. His system is expressed in terms of three "markets"—the markets for free reserves, demand deposits, and time deposits. Adjustments in these three markets are related to three interest rates—the yields on three-month treasury bills, long-term U.S. securities, and commercial bank time deposits—all of which are determined by the model's six equations.

The heart of this model and its main novelty is its treatment of free reserves.⁵ A reserves identity equation (equation 26.1.1 in Figure 26.1) that contains the exogenous monetary policy variables is interpreted to be a supply equation serving the three financial markets, including that for free reserves. The demand for free reserves is determined by the banking system's response to its reserve position and is related to deposit growth and the treasury bill rate. The supply and demand for free reserves basically determine the treasury bill rate in the model.

One feature of the de Leeuw model with a long-lasting influence is his use of the interest rate term structure to model relations among financial markets. This device has come to be used as a simple way to move from a rate whose determination is specifically modeled to other rates without having to model the other financial markets. Unfortunately, this device necessarily assumes that the term structure remains constant.

What progress was made by the de Leeuw model as a whole in describing the U.S. financial system? Most centrally he provided a within-the-model (endogenous) explanation of the money stock and both short- and long-term interest rates. His model also contains as exogenous variables all the major Federal Reserve policy instruments. And as the simulations in the article indicate, the model tracks the financial system reasonably well.⁶ On the other hand, the model

focuses heavily on the banking system; nonbank financial institutions and major financial markets such as the mortgage market are notably absent. In addition, the basic mechanism remains liquidity preference oriented. For example, the treasury bill rate is determined indirectly, without benefit of supply-and-demand analysis of the treasury bill market itself. Nevertheless, the bank reserves model—as his type of model came to be called—has remained a very durable one.

The Brookings model into which the de Leeuw submodel fitted was a quarterly model containing two hundred or more equations. By 1970 a number of such large models were in existence. Three others that contained substantial financial submodels were: the FRB-MIT model (Modigliani, Ando, et al.), the Wharton model (Klein et al.), and the DRI model (Eckstein et al.).⁷ These financial submodels all begin with a de Leeuw-like bank reserves model—that is, they begin with a money market determination of a short-term interest rate, and this rate is used to determine other interest rates by means of term structure equations. Beyond this the models go their own individual way, adding financial markets to further trace policy impacts. These may include the mortgage market, the bank loan market, and financial market impacts on household net worth. So the mainline econometric models were moving into financial representation in roughly parallel ways.⁸

This path of model development was not without its critics. From a social accounting viewpoint the famous “Pitfalls” article by Brainard and Tobin is important, presenting a powerful case for greater attention to social accounting.⁹ The model builder must ensure that social accounting equalities—both in level and flow form—must balance, not only in equilibrium but also in every period in a dynamic adjustment. Each causal relationship needs to be consciously related to the other social accounting entries it necessitates. Along the same lines, Christ is even more pointed about the main financial models, declaring none of the nine he examines to be properly specified in these respects.¹⁰

The next reading, the Bosworth/Duesenberry model, confronts some key financial features of the main line models. Most central is the Bosworth/Duesenberry rejection of the liquidity preference framework for the key short-term interest rate determination. They insist that a proper understanding of the financial system requires separate treatment for each financial market; the supply and demand for each instrument—other than money—is to be addressed.

Secondly, Bosworth/Duesenberry take a rather pragmatic view of whether stocks or flows should be emphasized in financial market analysis. The standard theoretical approach of portfolio balance theory is conceived in terms of instrument stocks. Practitioners, on the other hand, might well regard current flows of the instrument as more influential, say, in determining current interest rates. Bosworth/Duesenberry see this as a problem to be settled empirically rather than by theoretical guidance. In the end their model leans toward flows as being dominant in short-run financial adjustments.

Finally, Bosworth/Duesenberry represent a new level of attention to the social

accounting aspects of their model. As I understand their position, they regard the main technical suggestions for ensuring balances—such as those of “Pitfalls”—as not econometrically feasible. They use instead a system of residual acquisitions (or issues) to bring each sector and each financial market into accounting balance. The reader is left to judge the realism of their choice of residual items.

The Bosworth/Duesenberry model marks a major new integration of flow-of-funds analysis and econometric model building. A balanced treatment is accorded the whole spectrum of financial assets and liabilities in U.S. financial markets. The model is outstandingly successful in the amount of realistic financial detail it incorporates. And as a later article demonstrates, its aim of facilitating a model analysis of institutional and regulatory change is quite fully realized.¹¹

A somewhat different attack on the financial core of the mainline models is embodied in Benjamin Friedman's work. He finds the term-structure approach to the determination of long-term interest rates to be unsatisfactory. Instead he proposes a loanable funds model of the U.S. corporate bond market, a model containing specific supply-and-demand equations for the various marketer groups and that solves for the bond yield. Thus, a straightforward flow-of-funds approach to the market. The model is so designed that it can become a submodel in the large MPS model. So Friedman is able to run simulations with the MPS model, including *either* its term structure equation *or* his bond model to observe how much the MPS model results change by using the new approach to the bond yield. This would seem to be a most useful device for the exploration of model improvement.

In the article at hand Friedman is not specific about the fitted equations in his model, so a few examples may be illuminating. The arguments in the corporate sector supply of bonds equation include: the corporate sector opening cumulated deficit (a liability level), the sector's current period deficit (a liability flow), the current and lagged bond and commercial paper yields, the current and lagged consumer price index, common stock prices, corporate equity retirements, and the corporate sector's opening short-term debt outstanding. The lagged rates on this list relate to the modeling of expectations. The arguments in the life insurance sector demand for bonds equation include: the life insurance opening portfolio level, the sector's current period investible flow, the current and lagged bond and residential mortgage yields, lagged common stock prices, and the opening stock of commercial mortgages. Friedman has designed an econometric model within which he can insert those variables that, based on empirical judgment, are the most influential on the demand or supply of a particular sector. Being able to vary the argument list to suit the sector is a valuable flexibility. And indeed, the model performs well in tracking the corporate bond yield.¹²

As Friedman's simulations demonstrate, the insertion of his bond model into the MPS model markedly changes its behavior. This is because the bond yield can now respond to a new variety of market forces—not merely the short-term

yield—and because in the MPS model the bond yield is a key channel of influence on GDP expenditures. For example, when a policy simulation alters the corporate need for external finance or alters the household availability of investible funds, these forces will alter the bond yield and thus provide new types of influence on the model's nonfinancial economy. In addition, such a model opens the way for the model analysis of debt management policies.¹³

For a number of years during the 1970s James Tobin and several colleagues were developing a general equilibrium model of the economy, one that was to integrate full accounts of both the financial and nonfinancial parts of the economy.¹⁴ The analysis included here is a 1980 progress report, a presentation of their empirical work on the financial institution and household sectors. But the report begins with a useful verbal sketch of their vision as a whole, which provides a context for the financial institutions analysis.¹⁵

A most striking aspect of this model is its empirical orientation. Its variables all have real-world specifications, many corresponding to those in a flow-of-funds matrix. The model is centered upon a portfolio balance analysis of sector balance sheets. The sectors are seen to have long-run target balance sheet positions based on asset yields, which are approached via a sector's current period flows of assets and liabilities. The primary explanatory variables for the asset demands are (1) past stocks of assets, past yields, and past capital gains, and (2) current saving (or inflows), current yields, and unexpected wealth additions.¹⁶ The equations involve lag structures that give the model a dynamic adjustment process, which is the model's heart.

Other key features of the model should be mentioned. Great care is taken to meet the "Pitfalls" criteria for assuring a balance in the social accounting relationships, including the use of all asset yields in each sector portfolio behavior equation. Also, an unusual feature is the use of *a priori* parameter estimates blended with those derived from least squares. This procedure no doubt indicates the econometric difficulties encountered by the authors. But it needs to be stressed that priors, while perhaps subjective, nevertheless do represent empirical judgments about parameters. Finally, in the simulation section of this paper we are shown an interesting array of the policy impacts that can be analyzed with a model containing a full financial structure.

It does seem to me that portfolio adjustment theory is applied here with excessive uniformity among the sectors and financial instruments. For example, I am skeptical that treating liabilities as mere negative assets in a portfolio will result in an adequate modeling for liabilities. And many transactors may not have long-run target balance sheets. More broadly, this is a complex model. Its complexity results partly from the sophistication of its theory and partly from the methods adopted to satisfy the social accounting equations. We can sense that fitting this model presses the state of econometric technique to its limits. At any rate, as far as I am aware, Tobin and his colleagues have not as yet been able to offer us a fit to the envisioned model as a whole.

The preceding three selections—those of Bosworth/Duesenberry, Friedman, and Backus et al.—can be seen as an attempt to alter the way the mainline macromodels represent the financial system, altering them in a flow-of-funds direction. All three use flow-of-funds variables in models that move away from liquidity preference theory and away from interest rate structure equations and toward direct modeling of a broad array of financial markets. Seen in this way the attempt was, however, not very successful. The major macro models still retain a de Leeuw-like money market submodel for the determination of the short-term interest rate and use the short rate to derive other rates.¹⁷

The last reading in Part VI differs sharply from the others. It is representative of a new class of empirical models: multicountry models. Their origins can be traced back to Project LINK, which began in 1968 under the direction of Lawrence Klein. The idea was to formally link together the various national models to explore the international transmission mechanism. During the 1970s, with the advent of flexible exchange rates and the easing of restrictions on international capital movements, the LINK research agenda moved toward the modeling of capital flows and exchange rates. And in the following decade empirical multicountry modeling grew far beyond LINK into fifteen or more major projects, with varying emphasis on financial features.

To illustrate the use of flow-of-funds in this area of modeling, we have selected an early model of Marwah and Klein that was designed to explain international capital flows and foreign exchange rates among six major countries. In this model the net capital flows are analyzed into nine transaction-type categories that closely parallel those in flow-of-funds accounts, so it is appropriate to include the model here.

In the Marwah/Klein model structural equations lay out the causal variables determining each capital flow and the exchange rate for a country. A country's capital flows are seen to be allocating a portfolio stock, the allocations depending primarily on (1) the expected differential yield between domestic and foreign securities, (2) differential inflation rates, and (3) the balance of payments current balance. As the reader discovers, however, modeling factors (1) and (2) involve complex analysis of expectations, risks, and forward exchange rates. The same is to be said for the modeling of the exchange rate determination.

The model is fitted using annual data (1972–79) pooled across the six countries.¹⁸ The pooling implies that the portfolio behavior of the six countries is identical. This illustrates the type of adaptation made necessary by not having long time series of consistent bilateral capital flow data. The simulations were, however, carried out country by country, and Table 30.1 indicates how well the model tracks the six exchange rates.

During the past fifteen years efforts in multicountry modeling have been intense. However, the models have moved away from the explicit treatment of capital flows. And there has come to be general agreement that the effort to endogenize the exchange rate has failed. Also, one senses that the models do not

yet track international finance very well. Simulation results are quite diverse.¹⁹

I have three reactions to the multicountry models. First, the models are loaded with simplistic doctrine—for example, the quantity theory of money, liquidity preference theory, purchasing power parity, and perfect capital mobility. Use of such theory moves the modeling effort away from the immediate empirical determinants of capital flows and exchange rates. Second, the complex problem of modeling expectations seems only to have begun. To presume that current expectations can be modeled via mechanical links to the past seems especially naive. In the nonfinancial economy we are learning how to *observe* current expectations via surveys of plans and confidence. My third reaction is broader. It may well be that not all parts of economies can be successfully modeled. Some parts may behave more like evolving historical processes than repeating mechanical systems.

Notes

1. Lawrence R. Klein and Arthur S. Goldberger, *An Econometric Model of the United States, 1929–52* (Amsterdam: North-Holland, 1955). The model was put into quarterly form for cyclical analysis by Klein in “A Postwar Quarterly Model: Description and Applications” in *Models of Income Determination*, Studies in Income and Wealth 28 (Princeton, NJ: Princeton University Press, 1964). Klein has remained a central figure in the whole development of macromodels.

2. However, it should be noted that in the mathematics of the model as a whole the interest rates are determined by the excess reserves policy variable rather than the liquidity preference functions.

3. In 1963 Gary Fromm and Edwin Kuh were added to its management.

4. The piece presented here is a 6-equation condensation of the 19-equation sub-model originally designed for the Brookings model.

5. There is in fact an actual money market for free reserves, the market for federal funds. However, de Leeuw makes no attempt to model the federal funds market, and he assumes his free reserves “market” has a zero price.

6. This is Carl Christ’s judgment. See Carl F. Christ, “Econometric Models of the Financial Sector,” *Journal of Money, Credit, and Banking* 3, no. 2, part 2 (May 1971).

7. The FRB-MIT model evolved over the 1970s into the FRB-MIT-Penn model and then into the MIT-Penn-SSRC or MPS model.

8. See Ronald G. Bodkin, Lawrence R. Klein, and Kanta Marwah, *A History of Macroeconomic Model-Building* (Aldershot, Eng.: Elgar, 1991).

9. William C. Brainard and James Tobin, “Pitfalls in Financial Model Building,” *American Economic Review* 58 (May 1968).

10. Christ, “Econometric Models of the Financial Sector.”

11. James S. Duesenberry and Barry Bosworth, “Policy Implications of a Flow-of-Funds Model,” *Journal of Finance* 29 (May 1974).

12. See Benjamin M. Friedman and V. Vance Roley, “Models of Long-Term Interest Rate Determination,” *The Journal of Portfolio Management* (Spring 1980).

13. See Jonas Agell, Benjamin Friedman, and Mats Persson, *Does Debt Management Matter?* (New York: Oxford University Press, 1992).

14. Tobin’s Nobel lecture can be seen as the ultimate expression of the vision. See James Tobin, *Money and Finance in the Macroeconomic Process*, Cowles Foundation Paper 543 (New Haven, CT: Cowles Foundation, 1982).

15. [However, we have omitted the later mathematical exposition of this vision.—Ed.]

16. Estimates of "expected wealth" are derived from past wealth trends. "Unexpected wealth" is derived from current period differences from trend values.

17. The DRI model is said to have "an extensive flow-of-funds submodel," including the mortgage market and a household (portfolio choice) flow-of-funds account. Nevertheless, even here the bank reserves/interest rate determination seems to be the heart from which other financial effects are derived. See Otto Eckstein, Edward W. Green, and Allen Sinai, "The Data Resources Model: Uses, Structure, and Analysis of the U.S. Economy" in Lawrence R. Klein and Edwin Burmeister, eds., *Econometric Model Performance* (Philadelphia: University of Pennsylvania Press, 1987).

18. A similar model was later fitted using quarterly data. See Kanta Marwah, "A Prototype Model of Foreign Exchange Markets of Canada: Forecasting Capital Flows and Exchange Rates," *Economic Modeling* 2 (April 1985).

19. See Ralph C. Bryant and others, eds., *Empirical Macroeconomics for Interdependent Economies* (Washington, DC: Brookings, 1987).

JOHN C. DAWSON

The Flow-of-Funds Matrix in a Model

(1958)

I

This financial model is characterized by three broad features. First, the model presupposes that financial markets can be analyzed by means of the flow of dollars passing through them in much the same way that nonfinancial markets are analyzed in models using flows like consumption and investment. As a result, the model places less emphasis than is usual on price variables such as interest rates and on stock variables such as the quantity of money or liquid assets. Secondly, the choice of variables for the model is somewhat pragmatic. The variables are mainly financial market flows with large year-to-year movements during the post-World War II period. Annual data are available for all the variables and quarterly data for most of them. Further, in setting up behavior equations major reliance is placed on more or less obvious relations to be found in the data. Finally, the model as a whole is built up from its parts. A number of submodels are first developed for various sectors, each describing the basic financial behavior of the sector. Then these sector submodels are fitted together to form the complete model.

The model deals with the annual flows through four broad financial markets—federal obligations, corporate securities, bank loans, and mortgages—and also with the change in cash balances. There are thus five financial claims in all. We focus on the dealings in these claims by five sectors: consumers, corporate business, the federal government, a banking sector, and an insurance sector. In Figure 25.1 the lower or financial portion of the display of variables shows these

Reprinted, with permission, from John C. Dawson, "A Cyclical Model for Postwar U.S. Financial Markets," *American Economic Review* 48 (May 1958): 145–57.

five sectors and transaction types. The letters in these cells represent financial flows that are to be variables in the model. Each one represents the net increase in the holding of (use) or liability for (source) a particular claim by a particular sector.

Income and product circuit variables are the prototypes for the nonfinancial expenditure and receipt variables in the upper portion of the display. In general these variables are considered given and so are the sector surpluses or deficits that can be computed from them. The submodel for each sector will focus on how the sector finances this deficit or disposes of this surplus.

We first consider the corporate submodel. How does the corporate sector finance its deficits? Corporations borrow in two main ways: by security issues and bank borrowing. We shall assume that net security issues are solely a direct function of corporate fixed investment and that bank borrowing is similarly related to corporate inventory investment. Corporations obtain the rest of their funds (and dispose of any extra borrowing) in the submodel by variations in their holdings of federal obligations, the increment to such holdings being large when there is less need for borrowing, and the increment being small (perhaps negative) when funds are needed. The increment to corporate cash is assumed constant.

In this corporate submodel the volume of security and bank loan borrowing depends entirely on the corporate demand for such funds. What about the influence of supply conditions in these markets? In the corporate security market we expect a tightening supply of funds to be reflected in tighter borrowing terms, including a rising interest rate. But corporate business is dominated by large corporations that are usually able to float securities even in the tightest market, if they so desire. If, in addition, the high interest cost does not influence corporate investment or the choice among our financing methods, we have the model formulation.

In the bank loan market, also, it seems probable that the demand for funds will predominate. But bank credit rationing—not merely high loan rates—may be expected when bank lending capacity is being pressed. However, such rationing is not easily observed in the post-World War II data, and it has not been incorporated into the model.

In the postwar period the bulk of the temporary variation in corporate financing, particularly that resulting from inside fund movements, has been cushioned by holdings of federal obligations rather than cash. High postwar interest rates have provided an incentive for economical cash balance management. As a result, the corporate cash increment in recent years has been small and stable and we have assumed it constant in this submodel. Unfortunately, the revised flow-of-funds data for recent years in the October 1957 *Federal Reserve Bulletin* make this assumption less tenable than do earlier data.

The submodel for the federal government assumes that changes in the federal deficit will be reflected dollar for dollar in changes in the net issue of federal

Figure 25.1 Variables and Equations

- I. *Display of Variables.* All the variables used in the model with the exception of two are presented in the condensed flow-of-funds summary matrix below. The exceptions are r_a , an average of the interest rates for federal obligations and corporate securities, and r_d , the difference between the interest rates for federal obligations and corporate securities.

DISPLAY OF VARIABLES

Sectors:	Consumer		Corporate Business		Federal Government		Bank		Insurance	
Transaction Categories:	u	s	u	s	u	s	u	s	u	s
<i>Nonfinancial:</i>										
Product expenditures ¹	H_c D_c		F_b I_b		G_g		*		*	
Receipts, net ²		Y_c		Y_b		Y_g		†		Y_i
<i>Financial:</i>										
Δ Currency and deposits	m_c		†		†			m_m	*	
Δ Federal obligations	f_c		f_b		f_g		f_m		f_i	
Δ Corporate securities	s_c		*	s_b	*		†	*	s_i	
Δ Bank loans		l_c		l_b		*	l_m			
Δ Mortgages	*	b_c	*	*	*		†		b_i	

* Variable is assumed negligible.

† Variable is assumed constant.

¹ Product expenditures are consumer new housing expenditures (H_c), new consumer durable expenditures (D_c), corporate fixed investment (F_b), corporate inventory investment (I_b), and federal government purchases of goods and services (G_g).

² Nonfinancial receipts, net for each sector equals total nonfinancial receipts less nonfinancial expenditures other than product expenditures.

NOTE: The definitions of all sectors and transaction types are taken from the Board of Governors of the Federal Reserve System, *Flow of Funds in the United States 1939-1953*, except that the banking sector here excludes mutual savings banks and the postal savings system. The rate on federal obligations used in Appendix A is the average of the rates on new bill issues and long-term bonds, old series. The corporate security rate is Moody's for total corporate bonds. These data appear in the *Federal Reserve Bulletin*.

II. *Exogenous Variables.* All nonfinancial expenditure and receipt variables in the display are exogenous except H_c . Financial flows m_m and in effect m_c and f_g are exogenous (see IV. *Accounting Equations*). The surplus for consumers ($Y_c - H_c - D_c$) is exogenous. The surplus or deficit for all other sectors is exogenous since it can be computed from the exogenous nonfinancial variables for each sector.

III. *Endogenous Variables.* All financial flow variables in the display except m_m , m_c , and f_g are endogenous. Also, r_a , r_d , and H_c are endogenous. There are 15 endogenous variables in all.

IV. *Accounting Equations.* There is a budget equation corresponding to every sector column and a transaction type equation corresponding to every row in the display. All flows of missing sectors and missing financial transaction types are assumed constant. Thus, each sector's total sources is assumed to differ from its total uses by a constant. And each transaction type's total sources is assumed to differ from its total uses by a constant.

The model uses the 10 accounting equations corresponding to the financial portion of the display. Of these 10 accounting equations, 2 solve immediately, m_c being the only unknown in the Δ currency and deposits row and f_g being the only unknown in the federal government column. There remain 8 accounting equations, 7 of which are independent.

(continued on page 370)

Figure 25.1 (continued)

V. Behavior Equations.

	General Form		Illustrative Form ^a
Corporate business:	$l_b = f_1(I_b)$	(1)	$l_b = .8I_b$
	$s_b = f_2(F_b)$	(2)	$s_b = .4F_b - 2.0$
Insurance:	$b_i = f_3(r_a)$	(3)	$\Delta b_i = -2.2r_a + 6.0$
	$s_i = f_4(r_a, r_d)$	(4)	none
Consumer:	$l_c = f_5(D_c)$	(5)	$l_c = .2D_c - 2.0$
	$b_c = f_6(H_c)$	(6)	$b_c = .8H_c$
	$f_c + s_c = f_7(r_a)$	(7)	$f_c + s_c = 6.0r_a - 13.8$
	$s_c = f_8(r_a, r_d)$	(8)	none

^a These equations are used to provide the illustrative data used in the text. The parameters in these linear forms are graphically determined from the lines arbitrarily placed on the scatter diagrams in Appendix A. This procedure is intended merely to give a very rough approximation of the magnitudes involved and to show some evidence in support of the model's behavioral assumptions.

VI. *Solution Procedure.* (NOTE: Prior to the formal solution of the model, the currency and deposits equation has solved for m , and the federal government budget equation has solved for f_g .) Equations (1), (2), and the corporate budget equation solve for l_b , s_b , f_b . Equation (5), the bank budget equation, and the bank loan market equation solve for l_c , l_m , f_m . Equation (3), (7), the insurance budget equation, and the sum of the corporate security and federal obligation market equations solve for r_a , b_i , $f_c + s_c$, $f_i + s_i$. Equations (4), (8), and the corporate security market equation solve for s_c , s_i , r_d . The mortgage market equation solves for b_c and equation (6) solves for H_c . Equation (7) solves for f_c and the insurance budget equation solves for f_i .

obligations. The federal cash increment has been small in most years since World War II and we neglect its movements as well as federal activity in other financial markets.

The banking sector in the model consists of a consolidation of all commercial banks, the Federal Reserve System, and Treasury Monetary Funds. The sector has changes in currency and (demand and time) deposit liabilities—which we shall consider to be the money supply—and corresponding changes in portfolio assets in the form of federal obligations, corporate securities, mortgages, and bank loans. We shall assume that the Federal Reserve controls the movement of the total currency and deposit liabilities and thus the change in the total size of the banking sector's portfolio. As a consequence, the commercial banks have discretion to change only the composition and not the size of the banking sector's portfolio. They substitute one financial asset for another.

Banks give first priority to satisfying bank customer loans and they will liquidate federal obligations, if necessary, in order to do so. The year-to-year movements of bank lending on account of mortgages and securities are minor in comparison to bank loans and we have elected to disregard them. In summary, we have a model banking sector whose increments in currency and deposit liabilities and total bank credit are determined (exogenously) by the Federal Reserve; whose lending on account of bank loans meets in full the demands of borrowers; whose increment to security and mortgage holdings is constant; and whose lending on account of federal obligations is residually determined.

We shall take account of only one other financial institution in the model: insurance companies. Mutual savings banks, savings and loan associations, and private pension funds specialize in only one or two of our financial instruments, minimizing the possibility of portfolio shifts. Their portfolio items show rapid growth but relatively little cyclical movement.

The insurance submodel assumes that insurance companies have a given surplus, roughly equal to their premium and investment income less benefit payments and operating costs, which is allocated among acquisitions of mortgages, corporate securities, and federal obligations. In contrast to banks, insurance companies are not in business to make a particular type of loan. Their portfolio policy favors the instrument whose rate of return is relatively high. But their reactions show considerable inertia; the favored instrument will merely attract somewhat more than its usual share of the annual surplus.

In determining their mortgage purchases, insurance companies take all the conventional mortgages obtainable; in recent years the rates on conventionals have been high enough to make them continuously attractive. But the large year-to-year movements in insurance mortgage acquisitions are found in government underwritten mortgages, which, with their lower and less flexible rates, must compete with securities for a place in the insurance portfolio. If the rate on government underwritten mortgages is well above the rates on other securities, mortgage acquisitions will tend to be larger than usual. Since this mortgage rate is less flexible than the rates on other securities, the movement of this differential can be judged by the movement of the other rates. Thus, we assume insurance acquisition of mortgages to vary inversely with an average of the corporate security and federal obligation rates.

In deciding their net corporate security purchases, insurance companies presumably make one rate comparison with mortgages and another with federal obligations. Thus, the insurance acquisition of corporate securities is assumed to vary directly with both the average of the corporate security and federal obligation rates (for the security-mortgage comparison) and the difference between these rates (for the security-federal obligation comparison). These interest rate variables will be referred to as the average rate and the rate differential. The remainder of the insurance surplus is assumed to go into—or out of—federal obligations.

What does our last sector, consumers, do with its surplus, i.e., with the financial portion of its saving? Since consumer financial information is rather scarce and inaccurate, we are forced to rely rather heavily on the imagination here. Consumers both lend and borrow extensively at the same time. Presumably the consumers who borrow are different from the consumers who lend. Let us assume the consumer sector consists of two groups: a small rich group and a large poorer group.

The rich group has a large nonfinancial surplus, which we may guess is placed to some extent into cash but mainly into federal obligations and securi-

ties—including state and local obligations with which our model does not deal. It seems likely that this group manages its portfolio carefully and responds to interest rate levels and differentials in doing so. We assume that rich consumers step up their placement of funds in securities as the average interest rate rises, and also that they will favor corporate securities over federal obligations in this placement when the corporate rate is high relative to that on federal obligations, i.e., when the rate differential is high.

The large poorer group, on the other hand, does the bulk of the mortgage and bank borrowing done by consumers. The mortgage borrowing we assume related to new housing expenditures, the bank borrowing to consumer durable expenditures.¹ The poorer group places funds in financial assets, too, but we guess this group to be lethargic in managing its financial assets, tending merely to let its spare income pile up in the form of cash or close substitutes for cash. This provides the basis for one feature of the model as a whole: cash drains to consumers. Because the cash increment of every other nonbank sector is assumed constant, any change in the money supply increment will be reflected in a corresponding change in the consumer cash increment.

When we combine our rich and poorer groups, the consumer submodel ends up with four behavior equations: consumer mortgage borrowing directly related to new housing expenditures, consumer bank borrowing directly related to new consumer durable expenditures, consumer acquisitions of federal obligations plus corporate securities directly related to the average rate, and corporate security acquisitions directly related to both the average rate and the rate differential.

II

The details of the particular way we have put the submodels together appear in Figure 25.1. In summary, for the model as a whole there are 14 endogenous financial variables, 12 financial flows in the Figure 25.1 display (all financial flows except m_m , m_c , and f_g), and two interest rate variables (r_a and r_d). But there are 15 independent equations, 8 behavior equations, and 7 independent accounting equations from the financial flow matrix. We have chosen to equate the number of unknowns and equations by making new housing expenditures an endogenous variable. To justify this step, we must briefly digress.

In the model when an exogenous expenditure variable is tightly tied to a borrowing instrument, the demand-for-funds side of the particular financial market is played up. Such an arrangement would fit well the situation of financing housing purchases via conventional mortgages where, as we have indicated, the supply of funds accommodates to the demand. But in government-underwritten mortgages—wherein lie most of the postwar cyclical movements—demand for housing and mortgage funds on such easy terms has

been plentiful, and the supply of funds seems largely to have determined the mortgage flow. Making housing expenditures endogenous in the model will emphasize the supply side of the mortgage market.

Our model is, then, one containing 15 equations and endogenous variables. But instead of the 15 equations solving simultaneously, we are able to follow chain-like paths through the equations, occasionally coming to small groups of equations that are simultaneous. If our model had more simultaneity, there would be more room for mutual adjustments among the sectors and markets, but, paradoxically, we would see less of the mechanics of how such adjustments take place.

To trace through the solution, we start with the exogenous expenditure variables. Corporate fixed investment determines the dollar volume of corporate security issues, i.e., the corporate demand for security funds. Similarly, corporate inventory investment determines corporate bank borrowing. Given the corporate deficit, these two financial flows will determine the volume of federal obligations that corporations must buy or sell to balance their budget, and the corporate column is solved.

The bank loan market is next. Banks in the model meet in full the demand for bank loans by corporations and by consumers, the latter as determined by the exogenous consumer durable expenditures. This bank lending, together with the given change in the money supply, will determine bank sector acquisition or liquidation of federal obligations. As we noted above, the federal government sector is already solved, exogenous expenditures and receipts determining the net volume of federal obligations issued or retired.

Consumers and insurance remain. We think of these sectors as savers—as absorbers of financial instruments. In the model these sectors must absorb the excess of what has been issued in the federal obligation and corporate security markets over what has been absorbed by banks, corporations, and the federal government. If we view the markets for federal obligations and corporate securities as a single combined market—the capital market—we have both the supply of securities that must flow through this market and the demand for these securities by consumers and insurance as functions of the average interest rate in the market.² These equations solve for the volume of capital market securities taken by each of consumers and insurance, the average interest rate, and the volume of insurance funds remaining for mortgage acquisition. This capital market solution is the heart of the model.

The remainder of the solution proceeds in two directions. On the one hand, the mortgage lending by the insurance sector determines mortgage borrowing by consumers and hence their housing expenditures. On the other hand, the individual corporate security and federal obligation markets within the capital market must be solved for. In the model the rate differential between these two instruments will adjust sufficiently to induce the required purchases of each instrument. This completes the solution.

III

To put the model through its paces, we ask: How do cyclical movements in nonfinancial markets impinge on financial markets, and how does monetary policy influence the result?

Assume a 5 billion dollar step-up in corporate fixed investment. Various income circuit flows will be generated by such a boom, and we must make some assumptions about what they do to our sector surpluses and deficits. For corporations, perhaps 2 billion of the 5 will be financed by increased inside funds and the remaining 3 by an increased deficit. If so, other sectors must increase their surpluses by 3 and we will assume this increase concentrated with consumers. For the moment we hold unchanged the increment in the quantity of money. What happens to financial markets in the model?

The corporate fixed investment increase of 5 involves a step-up in net security issues of, let us say, 2.³ But since the corporate deficit rose 3, corporations will obtain an additional billion of funds by liquidation (or reduced acquisition) of federal obligations. So 3 billion in capital market securities must be absorbed by consumers and insurance, since banks and the federal government are not affected. Perhaps .8 is taken by the insurance sector—being accompanied by an equal step-down in insurance mortgage acquisitions—and 2.2 taken by consumers. But in the process, the average interest rate rises 0.4 percent. The rate differential will also have to adjust to favor the corporate securities enough for 2 of these securities to be absorbed by consumers and insurance as against only 1 of the federal obligations. Finally, the reduced flow of mortgage credit to consumers will reduce their housing expenditures by a roughly equal amount. The increase in the consumer surplus of 3 assumed at the start goes into a 2.2 increase in capital market security acquisitions and a reduction in mortgage borrowing of .8.

But suppose the monetary authorities had allowed a larger increment in the quantity of money? Since this type of boom involves no increased demand for bank loans, further bank credit expansion would be via the acquisition of federal obligations. Added purchases of 3, for example, would enable banks to purchase the billion liquidated or turned away by corporations plus 2 more in addition. There would now be no increase in the total capital market securities to be absorbed by consumers and insurance, who must absorb 2 more in corporate securities but 2 less in federal obligations, the latter going to banks. So the average rate does not rise, although the rate differential rises in order to favor the absorption of the corporates. For the capital market as a whole, instead of consumers and insurance acquiring additional capital market securities at higher rates, banks absorb them and consumers advance the funds to banks by absorbing additional cash. Since the insurance sector does not step up its acquisition of capital market securities, the insurance flow into mortgages is maintained. We may say that the effect of the easier money policy during this boom is to ease

both the mortgage market (the flow of mortgage credit being maintained) and the capital market (the average interest rate not rising). But tightness remains in the corporate security portion of the capital market, judging by the rate differential.

A second force influencing the financial effects of a boom in the model is the operation of the income circuit as reflected in the sector surpluses and deficits. In the case of the corporate fixed investment boom, if, instead of a corporate deficit increase of 3 and a corresponding consumer surplus increase of 3, there is no change in any sector's surplus or deficit, the financial effects of the boom are rather different. The fixed investment increase of 5 still causes corporate security issues to increase by 2, but with no change in the corporate deficit, corporations at the same time absorb additional federal obligations of 2. There is no overall increase in capital market securities that consumers and insurance must absorb. Although the rate differential rises, the boom does not tighten the capital market as a whole—the average interest rate does not rise—and the flow of mortgage funds to consumers is maintained. When corporations or the federal government can absorb additional federal obligations because of reduced deficits, the capital market is eased, just as it is when banks are enabled to do so by an easing of monetary policy.

A brief contrast may be made with other types of booms. Consider a corporate inventory investment increase of 5 billion. Let us retain the same original assumptions of a growth in the corporate deficit of 3 and a constant increment to the quantity of money. The increased inventory investment of 5 will lead to a step-up in bank borrowing of, say, 4—more nearly dollar for dollar than in the case of fixed investment—which will force banks to reduce acquisitions of federal obligations by 4. Corporations, on the other hand, borrowing 4 more in bank loans and only having a deficit increase of 3, will add a billion to their acquisitions of federal obligations. So the capital market is faced with absorbing only 3 of the 4 liquidated or turned away by banks. The results for the capital market as a whole are identical with the fixed investment case (average interest rate rising by 0.4 percent, etc.). But since the inventory boom involves placing only added federal obligations and not corporate securities, the rate differential will narrow.

A consumer durable boom is similar to an inventory boom in that the effect on financial markets comes via banks and their increased liquidation or reduced acquisition of federal obligations. But a consumer durable boom of 5 billion would involve stepped-up bank borrowing by consumers (both directly and via financing firms) of perhaps only 1 billion. In such circumstances the income circuit effect of the durable expenditures on sector deficits and surpluses is likely to influence financial markets more strongly than the consumer borrowing itself.

The model can also be used to trace the impact of federal fiscal policy on financial markets. We could, for example, demonstrate that the financial effects of increasing the federal deficit depend importantly on which sector absorbs the additional federal issues. But we must conclude.

Our model analysis might be summarized as follows. Corporate and consumer expenditure booms that are not accompanied by increased bank credit expansion will result in a tightening of financial markets in the model. In the capital market this tightening takes the form of an increased average interest rate accompanied by an increased flow of funds through this market as a whole. In the model's mortgage market this tightening is reflected in a reduced flow of funds passing through the mortgage market to consumers.

But various types of expenditure booms in the model do affect financial markets differently. The corporate fixed investment boom has its main impact on the flow through the corporate security market, and while corporations may also obtain funds from federal obligations, the corporate rate may well rise relative to the federal obligation rate to favor the absorption of the additional corporate security issues. On the other hand, the effects of a corporate inventory or consumer durable boom are concentrated via banks in the federal obligation market, and the rate differential will narrow to favor the absorption of federal obligations. Further, the financial tightening during a consumer durable boom of a given dollar size is milder and less certain than for either type of corporate boom.

The financial behavior of the model during these booms can be affected in two ways. The first is by changing the monetary policy. If the increment in the money supply is allowed to expand, such an easy money policy will ease the federal obligation market, the capital market as a whole, and the mortgage market. Banks, as a result of the increased expansion, step up their role as financial intermediaries, advancing additional funds via loans or federal obligations and obtaining additional funds from consumers who are acquiring more cash. In general, the effects of a tight money policy would be in the opposite direction, adding to the financial tightness caused by the boom itself. Because monetary policy has its immediate impact on the federal obligation market and can affect the corporate security market only indirectly, the monetary authorities in the model are better able to cope with an inventory or consumer durable boom than with a fixed investment boom.

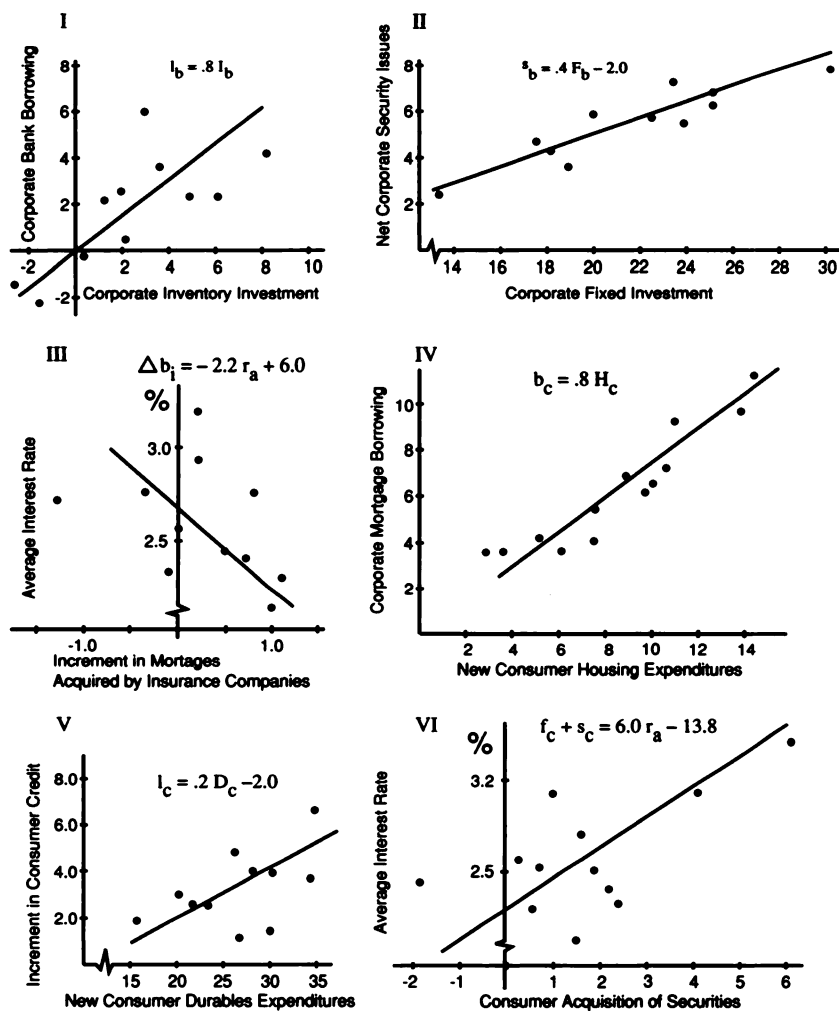
Secondly, the model's financial behavior is importantly affected by the income circuit adjustment of sector deficits and surpluses. To the extent that these adjustments reduce the net flow of saving required to pass through financial channels from consumers and insurance to corporations or the federal government, financial markets in the model will not be as tight during expenditure booms.

This model analysis has focused on the impact of monetary policy and fluctuations in the goods and services markets on the financial mechanism. Our conclusions are not very novel. But the model does attempt to specify the mechanics by which these forces work themselves out in the various financial markets. Such an approach may be a first step toward a fuller analysis directed at how monetary policy affects the economy as a whole, including nonfinancial markets and ulti-

mately the GNP. If the model is on the right track, it can be varied and elaborated in numerous ways.⁴

We hope that this approach will look promising enough to encourage its further development. This kind of model could be useful, for example, in exploring the financial implications of a particular GNP projection. On the other hand, it should be clear that we have been discussing an unverified and partly unspecified model. One would be rash indeed to use it as the basis for formulating a real-world policy.

Figure 25.2 Derivation of Illustrative Behavior Equations*



*Note: For sources, see Figure 25.1. All charts show annual data 1946–56. Figures are in billions of dollars unless otherwise indicated. The lines are arbitrarily placed on the scatter diagrams.

Notes

1. Because the model takes no account of flows in trade debt and credit, a considerable portion of consumer credit is apparently omitted. However, much of this trade credit to consumers is extended by financing firms, who in turn obtain most of the funds from banks.

2. The insurance sector budget and the insurance mortgage lending equation combine to form this function for the insurance sector.

3. The figures used are for illustrative purposes only and are obtained from the formulation of behavior equations in Figure 25.1 derived from Figure 25.2. The numerical values for flows are in billions of dollars.

4. For example, bank mortgage acquisitions and corporate cash balance increments could be brought into the model. Also, more of the nonfinancial variables could be made endogenous. Such steps increase the simultaneity of the model and hence its mathematical complexity. Taking account of bank credit rationing and the effects of mortgage lending terms on their respective markets is another possibility. And, of course, there is room for variation in the sectors and transaction types used. The subsector models would be useful individually in more elaborate form even if it were not possible to integrate them formally.

FRANK DE LEEUW

A Bank Reserves Model

(1969)

I. Introduction

The model presented below is an outgrowth of an earlier, more extensive model of U.S. financial markets.¹ In both models quarterly demand and supply relationships explain "quantities" (stock and flows) and "prices" (interest rates) in financial markets. Both models are designed to serve as one sector in larger models covering the entire economy. But while the earlier model consisted of nineteen equations, the present one consists of only six. The earlier model covered markets for bank reserves, currency, demand deposits, time deposits, U.S. securities, and two broad aggregates labeled "savings and insurance" and "private securities." The present model deals only with bank reserves, demand deposits, and time deposits.²

An obvious advantage of the present condensed model over the former larger one is that the present model is easier to understand and to incorporate or adapt for use in broader models. There are also other reasons for constructing the condensed model. The larger model turned out to be very nearly decomposable into one group of equations determining bank reserves, deposits, and interest rates and a second group of equations relating other financial stocks and flows to the interest rates and flows determined in the first group. It seems useful to make the approximations necessary to decompose the earlier model completely and exhibit the first group of equations independently.³ The condensed model, furthermore, seems superior to the larger one in at least one respect and not obviously inferior in others.

Excerpted, with permission, from Frank de Leeuw, "A Condensed Model of Financial Behavior," in James S. Duesenberry, Gary Fromm, Lawrence R. Klein, and Edwin Kuh, eds., *The Brookings Model: Some Further Results* (Chicago: Rand McNally, 1969), pp. 271-315. Technical presentations of regression results for the individual equations and some of the simulations have been deleted.

Despite these advantages, the condensed model, like the earlier model, is better regarded as a set of tentative empirical explorations than as a test of a well-developed theory. There is evidence suggesting that there are systematic and important influences on financial markets not reflected in the condensed model—or in the earlier one. It remains to be seen which direction of theorizing, disaggregation, improved measurement, or more ingenious empirical representation will provide the best route for improving models of financial behavior.

The presentation of the condensed model is in four parts. First there is a general description of the way in which, according to the model, supplies and demands in reserve and deposit markets interact to determine interest rates and dollar stocks and flows. A list of variables and final equations appears at the end of this section. There follows a presentation and discussion of the regression results for individual equations. Tests of the model occupy the next section, including a simultaneous solution test of the complete model during the observation period and predictions of subsequent quarters.

II. A Summary of the Model

The condensed model, like the earlier model, estimates the paths of interest rates and financial stocks and flows for *given* movements in two principal groups of exogenous variables. The first consists of variables closely controlled (or controllable) by public policy makers: unborrowed reserves, reserve requirement ratios, the discount rate, and the maximum rate on time deposits are the principal ones. The second consists of the *GNP* and some of its major components. The model does not describe the ways in which financial variables affect the *GNP* and its components; it deals only with the effect of income and expenditures on financial demands. The two-stage least-squares procedure used in estimating the parameters of the model, however, is one that takes account of the existence of simultaneous interaction between financial and nonfinancial variables.⁴

A convenient point of departure for describing the model is the following identity:

$$RES_{NB} = RES_R + RES_F$$

in which RES_{NB} , RES_R and RES_F are three categories of bank reserves—unborrowed, required, and free reserves, respectively. The identity is based on three definitions: (a) unborrowed reserves equal total reserves minus borrowed reserves; (b) total reserves equal required reserves plus excess reserves; and (c) excess reserves minus borrowed reserves is the same as free reserves.

One of the terms in this equation, required reserves, is by definition equal to required reserve ratios multiplied by appropriate categories of member bank deposits. In the postwar period the ratio of member bank deposits to total deposits has been stable enough so that to a close approximation,

$$RES_R = 0.84[RRR_{DD}] [DD + DD_{GF}] + 0.82[RRR_{DT}][DT]$$

in which RRR_{DD} is a weighted average of required reserve ratios against demand deposits at different classes of bank, RRR_{DT} is the reserve ratio required against time deposits, DD and DD_{GF} are net private and federal government demand deposits, DT is net time deposits, and 0.84 and 0.82 represent average ratios of member bank to total demand and time deposits.⁵

A combination of the two equations,

$$RES_{NB} = 0.84[RRR_{DD}] [DD + DD_{GF}] + 0.82[RRR_{DT}] [DT] + RES_F$$

is treated as an identity in the model.⁶ It relates three monetary policy variables— RES_{NB} , RRR_{DD} , and RRR_{DT} —to three endogenous variables of the model— DD , DT , and RES_F —and to the Treasury-controlled variable DD_{GF} . It is a supply equation which says that the Federal Reserve System controls the supply of a weighted sum of demand deposits, time deposits, and free reserves.

Unborrowed reserves is not a variable that the Federal Reserve System can control to the last dollar. The "open market" variable that the System can control to the last dollar is, of course, its portfolio of government securities (excluding capital gains and losses). The difference between unborrowed reserves and Federal Reserve holdings of government securities consists of the gold stock, currency, and minor items such as Treasury cash accounts and float, which sometimes fluctuate sharply from week to week but have very little effect over long periods. Calling unborrowed reserves a policy variable amounts to assuming that the Federal Reserve System can, and often does, offset quarterly movements in the gold stock and in currency. Unborrowed reserves is one of a number of more or less plausible "open market" measures.⁷

Corresponding to this supply equation are three demand equations, for demand deposits, time deposits, and free reserves. The public's demands for deposits, both demand and time, are related to interest rates, current income, current capital spending, and a weighted average of past *GNP* as a proxy for wealth. Banks' demands for free reserves are related to interest rates (including the discount rate), current changes in deposits and required reserves, and total deposits as a proxy for the wealth of the banking sector. Dollar values in each of the equations are expressed as proportions of wealth rather than as absolute dollar magnitudes. Each of the demand equations has a stock-adjustment form in which changes in average holdings from the last quarter to the current quarter depend on the level of holdings in the last quarter and on the other explanatory variables. The equations are listed at the end of this section.

If the three demand equations contained only one interest rate (apart from the exogenous discount rate), then they would complete a financial model of four equations in which demand deposits, time deposits, free reserves, and the single interest rate were the four endogenous financial variables. In fact, however, the

demand equations involve three interest rates: the rate on long-term U.S. securities, the Treasury bill rate, and the average yield on bank time and savings deposits. To complete the model, therefore, two more equations describing the relationships among these interest rates are necessary.⁸

One of these equations describes the way in which banks set the yield on time deposits, the principal influences being the yield on U.S. securities and the maximum yield on time deposits permitted by the Federal Reserve System. This supply equation for time deposits also has a partial adjustment form. The final equation of the model relates the differential between the yield on long-term U.S. securities and the Treasury bill rate to (a) past changes in U.S. security yields—serving as a proxy for expected capital gains or losses; and (b) changes in the maturity composition of the Federal debt. This term-structure equation is a reduced form of demand equations for long- and short-term U.S. securities.

A list of variables and final equations of the model concludes this summary description: Variables in order of appearance are:⁹

RES_F	= free reserves of Federal Reserve member banks, average during quarter, billions of dollars
RES_{NB}	= unborrowed reserves of Federal Reserve member banks, average during quarter, billions of dollars
RES_R	= required reserves of Federal Reserve member banks, average during quarter, billions of dollars
RRR_{DD}	= weighted average of required reserve ratios against demand deposits, proportion
DD	= private demand deposit liabilities of commercial banks less interbank deposits, cash items in process of collection, and Federal Reserve float, average during quarter, billions of dollars
DD_{GF}	= federal government demand deposits at commercial banks, average during quarter, billions of dollars
RRR_{DT}	= average reserve ratio required against time deposits, proportion
DT	= private time deposit liabilities of commercial banks less time deposit holdings of commercial banks, average during quarter, billions of dollars
$WLTH$	= weighted average of recent values of <i>GNP</i> , billions of dollars
RM_{GBL}	= average yield during quarter on U.S. securities maturing or callable in ten years or more, percent
RM_{BDT}	= yield on commercial bank time deposits, percent
Y_D	= disposable personal income, billions of dollars
I_{BUS}	= business gross investment in plant and equipment, billions of dollars
I_{CO}	= private nonresidential, nonbusiness construction, billions of dollars
GNP	= gross national product, billions of dollars
RM_{GBS3}	= average market yield on three-month U.S. Treasury bills, percent

- RM_{FRB} = Federal Reserve Bank of New York discount rate, daily average during quarter, percent
 RM_{BDTM} = legal maximum rate payable on commercial bank time deposits held six months or more, percent
 $ALNPS_B$ = commercial bank holdings of loans and other private securities, billions of current dollars
 BF_1 = U.S. marketable debt maturing within one year, average during quarter, billions of dollars
 BF_{PUB} = marketable federal debt of all maturities outside Federal Reserve and U.S. government agencies and trust funds, average during quarter, billions of dollars
 BF_{1-5} = U.S. marketable debt of one- to five-year maturity, average during quarter, billions of dollars
 w_n = fourth-degree polynomial weights

Figure 26.1 Final Condensed Financial Sector Equations

Reserve identity

$$RES_F = RES_{NB} - RES_R \quad (26.1)$$

with

$$RES_R = 0.84[RRR_{DD}][DD + DD_{GF}] + 0.82[RRR_{DT}][DT] \quad (26.1.1)$$

Changes in the public's holding of demand deposits

$$\begin{aligned}
 \frac{\Delta DD}{WLTH} = & -0.00281 - \frac{0.108}{(0.039)} \left[\frac{[DD]_{-1}}{WLTH} \right] \\
 & - \frac{0.00491}{(0.00169)} RM_{GBL} - \frac{0.00236}{(0.00174)} RM_{BDT} \\
 & + \frac{0.067}{(0.025)} \frac{Y_D}{WLTH} + \frac{0.031}{(0.018)} \left[\frac{[Y_D]_{-1}}{[WLTH]_{-1}} \right] \\
 & - \frac{0.196}{(0.056)} \left[\frac{I_{BUS} + I_{CO}}{[WLTH]_{-1}} \right] \quad (26.2)
 \end{aligned}$$

with

$$WLTH = 0.114 \sum_{i=1}^{20} (0.9)^{i-1} (GNP)_{-i} \quad (26.2.2)$$

Changes in the public's holdings of time deposits

$$\begin{aligned}
 \frac{\Delta DT}{WLTH} = & -0.00205 - \frac{0.123}{(0.025)} \left[\frac{[DT]_{-1}}{WLTH} \right] + \frac{0.00627}{(0.00067)} RM_{BDT} \\
 & - \frac{0.00266}{(0.00032)} RM_{GBS3} + \frac{0.021}{(0.008)} \left[\frac{[Y_D]_{-1}}{[WLTH]_{-1}} \right] \quad (26.3)
 \end{aligned}$$

Changes in banks' holdings of free reserves

$$\begin{aligned} \frac{\Delta RES_F}{[DD + DT]_{-1}} = & -0.00156 - \frac{0.387}{(0.103)} \left[\frac{[RES_F]_{-1}}{[DD + DT]_{-1}} \right] \\ & - \frac{0.00216}{(0.00062)} RM_{GBS3} + \frac{0.00235}{(0.00067)} RM_{FRB} \\ & + \frac{0.053}{(0.027)} \left[\frac{\Delta[(DD + DD_{GF})(1 - 0.84RRR_{DD}) + DT(1 - 0.82RRR_{DT})]}{[DD + DT]_{-1}} \right] \end{aligned} \quad (26.4)$$

Changes in the yield on bank time deposits

$$\begin{aligned} \Delta RM_{BDT} = & -1.255 - 0.388[RM_{BDT}]_{-1} + 0.331RM_{BDTM} + 0.142RM_{GBL} \\ & + 1.02 \left[\frac{ALNPS_B}{DD + DT} \right]_{-2} \end{aligned} \quad (26.5)$$

Term structure of U.S. security rates

$$\begin{aligned} RM_{GBL} - RM_{GBS3} = & 1.315 - \frac{1.115}{(0.180)} \left\{ \sum_{i=0}^{10} [w_1]_{-i} [\Delta RM_{GBL}]_{-i} \right\} \\ & - \frac{1.413}{(0.227)} \left\{ \sum_{i=0}^{10} [w_2]_{-i} [\Delta RM_{GBL}]_{-i} \right\} - \frac{0.366}{(0.212)} \left\{ \sum_{i=0}^{10} [w_3]_{-i} [\Delta RM_{GBL}]_{-i} \right\} \\ & - \frac{5.1}{(2.2)} \Delta \left[\frac{BF_1}{BF_{PUB}} \right] - \frac{5.2}{(3.2)} \Delta \left[\frac{BF_{1-5}}{BF_{PUB}} \right] \end{aligned} \quad (26.6)$$

Note Standard errors of coefficients are shown parenthetically. This is a system in six equations (and a subsidiary relationship for RES_R) and six endogenous unknowns: RES_F , DD , DT , RM_{GBS3} , RM_{BDT} , and RM_{GBL} . All other financial variables are exogenous and nonfinancial variables are determined elsewhere in the complete Brookings model.

III. Individual Equations

The Public

Demands for financial assets by the public depend, according to the model, on wealth, income, and rates of return. Wealth is not represented directly; instead, a moving average of recent values of *GNP* enters the equations.¹⁰ Income is represented by two variables: disposable personal income and gross business income after federal taxes. Rates of return include interest rates on bank time deposits, on Treasury bills, and on long-term U.S. securities.

Rates of return also include two proxy variables to represent the expected return on holding real fixed assets. These proxy variables are (1) current fixed capital spending by business, and (2) current spending on consumer durables and residential construction, expressed in each case as a percent of the weighted average *GNP* variable just described. High capital spending in relation to

weighted average *GNP*, in other words, is taken to indicate a high expected rate of return on capital goods.¹¹

Two assumptions about the form of the demand equations complete the specification of these relationships. The first is that quarter-to-quarter changes in the public's holdings of financial assets represent a partial, rather than a complete, adjustment from last quarter's stock to the stock "desired" in the light of current wealth, income, and rates of return. In the equations, this assumption is implemented by letting changes in the stock of a financial asset depend on the lagged stock (with an expected negative coefficient), as well as on current levels of wealth, income, and rates of return.

The second assumption is that the equations are homogeneous of degree one in all dollar magnitudes. To implement this assumption, the dollar variables in each equation (including the dependent variable) appear as ratios to moving-average *GNP*, rather than as absolute dollar magnitudes. Ratios of current income to moving-average *GNP*, incidentally, correspond to the concept of "transitory" income.

Incorporating all these notions, we have the following equation for the public's holdings of demand deposits:

$$\begin{aligned} \frac{\Delta DD}{WLTH} = & a + b_1 \frac{[DD]_{-1}}{WLTH} + b_2 RM_{BDT} + b_3 RM_{GBL} \\ & + b_4 \frac{Y_D}{WLTH} + b_5 \frac{Z_{AU}}{WLTH} + b_6 \frac{C_D + I_{CNFR}}{WLTH} \\ & + b_7 \frac{I_{BUS} + I_{CO}}{WLTH} + u \end{aligned}$$

where symbols not previously defined are:

- Z_{AU} = corporate profits after tax but before inventory valuation adjustment, billions of dollars
- C_D = personal consumption expenditures on durable goods, billions of dollars
- I_{CNFR} = *GNP* expenditures on nonfarm residential construction, billions of dollars

and u is a random residual. The signs of b_1 , b_2 , b_3 , b_6 , and b_7 are expected to be negative, while those of b_4 and b_5 are expected to be positive. The equation for holdings of time deposits is of the same form, with the coefficient of the yield on

time deposits expected to be positive. An additional interest rate, the Treasury bill rate, is assumed to influence time deposit holdings with an expected negative coefficient.

There are, of course, a great many alternative specifications of these relationships worth investigating. The specification above omits any measure of price changes and of existing stocks of U.S. securities, currency, and other financial and real assets. Levels of consumer and trade debt and the ease of obtaining credit lines and credit cards are also ignored. Alternative assumptions as to the form of the relationship are as consistent with past empirical work as the ones adopted. While the demand equations of this model stand up well when compared with some currently popular alternatives, there remain many plausible alternatives that have not been tested at all.

The Banking System

The condensed model deals with five items in bank portfolios: net private demand deposits; federal government demand deposits; time and savings deposits; required reserves; and free reserves (excess reserves less indebtedness to the Federal Reserve System). The first two are assumed to be beyond the control of banks. Banks are viewed as standing ready, at least in the short run, which is the focus of the present model, to accept deposits or withdrawals in whatever amount the public and the federal government choose.

In the case of the third item—time and savings deposits—banks are viewed as attempting to control it indirectly by altering the rate of interest they pay to depositors. Bank behavior with respect to time deposits is accordingly represented by an equation in which changes in the yield, rather than changes in the amount, is the variable to be explained. The fourth item—required reserves—is determined by demand deposits, time deposits, and required reserve ratios, and appears as part of the reserve identity.

The final item, free reserves, is one that the banking system is assumed to vary, in the same way that the public varies its holdings of deposits. This is not to say, of course, that the Federal Reserve System has no control over free reserves or over deposits. The System can indeed, through its policy instruments, set fairly narrow limits to the quarterly average amount outstanding of any one reserve or demand deposit "target" variable. But this control over some weighted total of amounts outstanding by the System does not do away with the demand side of the deposit and reserve markets. It means rather that efforts by banks or by members of the public to change their deposit and reserve holdings may at times lead, in the aggregate, to a bidding up or down of interest rates and ultimately of income and prices, and only to a small extent to changes in actual quantities of reserves and deposits. The demand equations for free reserves and for deposits continue to describe (to the extent that they are accurate) relationships that banks and members of the public strive to maintain among reserves, deposits, interest rates, income, and wealth.

Bank demand for free reserves, then, is assumed to depend on interest rates, short-run changes in deposits less required reserves—a short-run flow that banks are assumed to take as a constraint, just as the public is assumed to take its short-run income flow as a constraint—and wealth. The interest rates entering into the regressions are the discount rate (at the New York Federal Reserve Bank) and the three-month Treasury bill market yield. The wealth of the banking system is represented by total private deposits.

As in the equations for the public, all dollar variables are expressed as ratios to the wealth variable. The “partial adjustment” framework is again adopted, so that current changes in free reserves are assumed to depend on the lagged level of free reserves (with an expected negative coefficient), the discount rate and the Treasury bill rate (with expected positive and negative coefficients, respectively), and the net change in deposits-less-required-reserves (with an expected positive coefficient).¹²

In the original Brookings model financial equations, changes in bank loans, like changes in deposits and required reserves, were assumed to be beyond direct bank control in the short run, and were incorporated into the short-run constraint variable for the banking system. In the present free-reserve relationship, a proxy variable for loan demand, business capital spending divided by moving average-GNP, was included in some of the regressions, but without significant results. Inventory investment or the determinants of inventory investment might be relevant, but were not included.

The Term Structure of Interest Rates

The final equation of the condensed model deals with the difference between the U.S. long-term rate and the Treasury bill rate—a difference that tells a good deal about the term structure of interest rates. It is assumed that U.S. securities of different term to maturity are close substitutes, possibly after allowing for a stable or slowly changing “liquidity premium.” Movements in *expected* yields (as contrasted to observed current rates) on various securities should therefore be parallel in the absence of major shifts in relative supplies.

The observed sharp changes in the differential between current rates on long-term securities and on bills are assumed to reflect mainly the fact that the expected yield on a long-term security in the near future includes not only the current rate but also any expected capital gain or loss, while the expected yield on a security with a very short term to maturity is simply the current rate.¹³ Movements in the differential between the two rates should reflect mainly movements in expected capital gains or losses on long-term securities. The term-structure equation of the model represents an attempt to devise a statistical measure of these expectations. The equation is a reduced form derivable from demand equations for long- and short-term government securities.

To represent expected capital gains or losses on long-term securities, the term-

structure equation makes use of a weighted average of recent changes in the long-term rate. "Average" market expectations about capital gains or losses on long-term securities are assumed to be a linear function of recent changes in long-term interest rates. A technique devised by Mrs. Shirley Almon has been employed to estimate the weights attached to recent changes, imposing only the restriction that weights fall along a polynomial (in this equation, a fourth-degree polynomial).¹⁴ The technique consists of forming three weighted sums of past changes in the long-term rate, and using the regression coefficients attached to these weighted sums to calculate the final weights.

Additional Equations

The six equations presented so far constitute a self-contained model of financial behavior—that is, they relate reserves, deposits, and interest rates to measures of income on the one hand and monetary policy on the other. For some purposes it may be useful to have a financial model that also explains currency, savings shares other than bank time deposits, and U.S. securities, since stocks of these assets as well as stocks of demand and time deposits may influence the public's nonfinancial decisions. Demand equations relating currency, savings shares, and U.S. securities to income, capital spending, and endogenous interest rate variables can easily be added to the condensed model. Adding a currency equation, furthermore, makes possible the use of the open-market policy variable *unborrowed-reserves-plus-currency* as an alternative to *unborrowed reserves* alone.

. . . .

IV. Tests of the Model

Two tests of the model are described below. The first is a simultaneous solution of the model from 1955 through 1962, using actual values of income and monetary policy variables, but letting the model generate the time paths of the endogenous variables. The second is a test against actual developments in the five quarters subsequent to the period in which the model was fitted.

Simultaneous Solution Test, 1955–62

The first test, corresponding exactly with a test run on the earlier model,¹⁵ begins with actual predetermined variables (income, monetary policy variables, and lagged financial stocks and interest rates) as of the first quarter of 1955, and solves the model simultaneously to get calculated values of the endogenous variables for that quarter. For the second quarter it uses these calculated values as lagged endogenous variables, uses actual income and monetary policy variables for the second quarter, and solves simultaneously. It continues in this fashion through 1962, always using actual income and monetary policy variables, always using calculated values for lagged endogenous variables, and al-

ways solving the model simultaneously rather than dealing with one equation at a time.

Since it refers to the period to which the model was fitted, it is not a test of the predictive power of the model. Rather, it is a test of whether (a) using calculated rather than actual lagged endogenous values, and (b) solving the model simultaneously rather than one equation at a time, causes actual and calculated values to drift apart over time or other systematic discrepancies.

The condensed model performs well in this test—better, in fact, than the larger model. As Figure 26.2 illustrates, the calculated values follow general levels and turning points of actual values closely, although residuals have obvious positive serial correlation. The corresponding solution of the larger model produced an “extra” minor cycle in a number of the calculated series in 1961 and 1962 (including the Treasury bill rate and the components of free reserves); but the present simulation does not have this shortcoming.

Prediction Tests, 1963–64

The second test, also illustrated in Figure 26.2, compares actual values of the endogenous variables in the four quarters of 1963 and the first quarter of 1964—observations not included in fitting the equations of the model—with two sets of calculated values based on the model. Both sets make use of actual initial conditions as of the start of 1963 and actual income and monetary policy variables during 1963 and 1964. Both sets are based on simultaneous solution of the model, quarter by quarter, with calculated values of the endogenous variables used as lagged values in solving for succeeding quarters—like the 1955–62 simultaneous solution test just described.

The two sets of calculated values differ in that the first set uses the fitted constant terms for each of the final regression equations, while the second set is based on constant terms adjusted for the amount of error in each relationship during the last quarter of 1962. Holdings of demand deposits, for example, were underestimated in the last quarter of 1962 by equation 26.2 in Figure 26.1, and so the constant term of the equation was raised from -0.0028 to -0.0016 , just enough to offset this understatement. The adjustment procedure should obviously improve predictions where residuals have strong positive serial correlation.¹⁶

The differences between the two sets of predictions are striking. In the first set, calculated and actual values drift apart steadily for the bill rate, free reserves, and demand deposits. In the second set, calculated values correspond very closely with actual ones. Table 26.1 shows these differences in prediction errors using adjusted and unadjusted constant terms for 1963: 1–1964: 1 as well as average errors for the unadjusted simultaneous solution for 1955–62.

Since the differences between the two methods of prediction are so large, it seems worth pondering their implications for the use of the model. One interpretation which seems plausible is that the differences reflect influences on deposit

Figure 26.2 Calculated and Actual Values of Financial Sector Variables

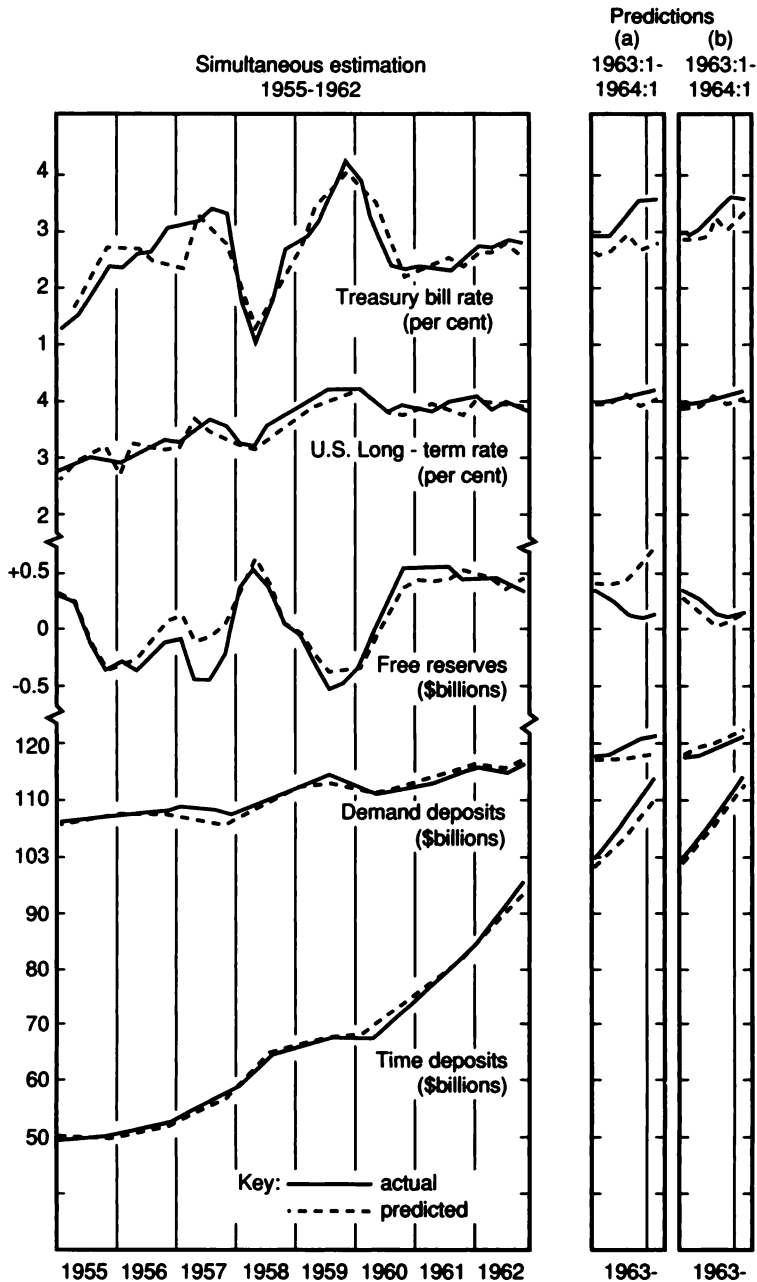


Table 26.1

Prediction Errors, 1963-64

	RM_{GBS3}	RM_{GBL}	RES_F	DD	DT
1963: 1 - 1964: 1 predictions					
constant terms not adjusted:					
average absolute error	0.55	0.08	0.32	1.84	2.80
root-mean-square error	0.59	0.11	0.37	2.25	3.43
constant terms adjusted:					
average absolute error	0.23	0.10	0.07	0.78	1.18
root-mean-square error	0.29	0.11	0.09	0.87	1.37
1955-62 simulation					
average absolute error	0.24	0.13	0.12	0.68	0.77
root-mean-square error	0.32	0.16	0.16	0.89	1.04

Note Units of measurement are percentages for interest rates, billions of dollars for reserves and deposits. The root-mean-square error is $[\sum e^2/n]^{1/2}$, where e 's are errors, the summation is over all observations, and n is the number of observations.

and reserve holdings and interest rate expectations that are omitted from the model but that change slowly over time.¹⁷ If these influences are important, then (a) they would give rise to serial correlation of error terms; and (b) rough correction of the equations for their net influence in a particular quarter would improve calculated values in neighboring quarters. Both of these consequences correspond to the behavior of the model.

If the model does indeed suffer from omission of important but slowly changing variables, then it is probably not very useful for long-run analysis or projection. The cumulative changes in omitted variables may dominate, or at least greatly affect, long-run developments in money and reserve markets. In periods of only a few quarters, these omissions should be much less serious as long as the equations are corrected in some fashion that offsets recent errors. The second set of 1963-64 prediction results holds out some hope for the model as a tool for short-run analysis.

V. Some Simulation Results

The short-run responses of the model to changes in monetary policy and in nonfinancial developments are the subject of this concluding section. The responses are illustrated by means of a set of simulation runs—that is, by assuming a set of initial conditions and a set of time paths for the exogenous variables, and then solving the model quarter by quarter for the endogenous variables. The

computer program used in the simulation runs is a general program for simulating economic models written by Ann Walka at the Federal Reserve Board.¹⁸ Some portions of the present section parallel closely a simulation study based on the earlier, nineteen-equation model; the description of results will point out similarities and differences between the two sets of simulations.

Like the earlier simulation study, the present one abstracts from the influence of financial conditions on nonfinancial markets and deals only with financial market behavior for *given* paths of *GNP* and its components. It is therefore only one part of a complete description of the effects of changes in monetary policy variables. Furthermore—and again like the earlier study—even as one part of a complete description, it is far from a set of confident assertions about how financial markets actually behave. Not until after a good deal of further testing of the model will it be possible to appraise its accuracy with any certainty.

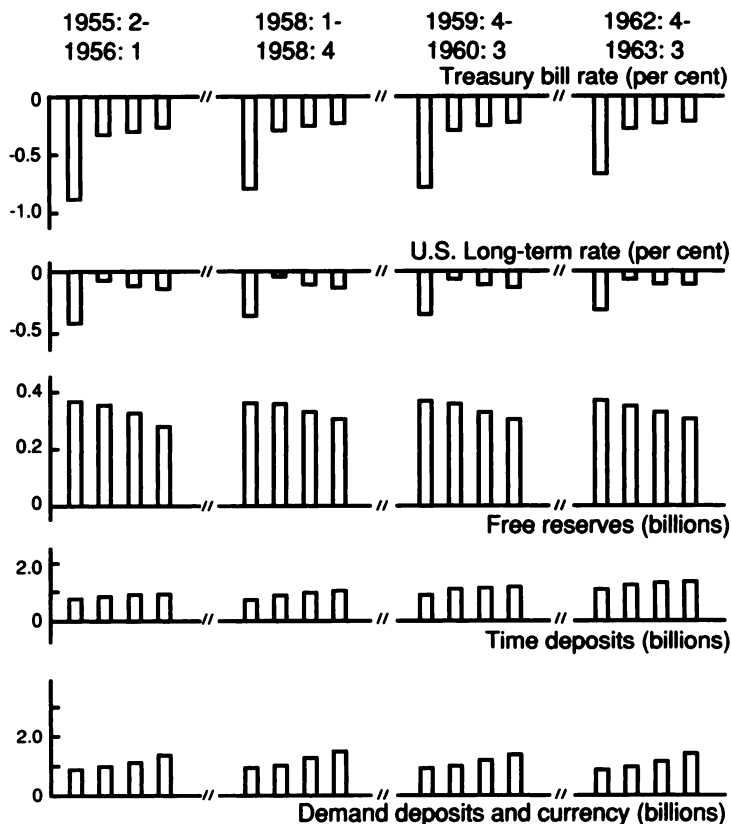
Open Market Operations

The first set of simulations, depicted in Figure 26.3, calculates the effects of a \$500 million increase in unborrowed reserves under four sets of historical initial conditions and time paths for exogenous variables. The bars in the chart show the difference between calculated values of endogenous variables using (a) actual time paths for all exogenous variables and (b) \$500 million more than actual historical values for unborrowed reserves in each quarter and actual time paths for all other exogenous variables. Starting points for the simulations are the second quarter of 1955, the first quarter of 1958, the fourth quarter of 1959, and the fourth quarter of 1962—points that provide a wide range of cyclical situations and monetary policy positions. Since the exogenous variables include *GNP* and its components, the simulations abstract from the ultimate effects of reserve changes on nonfinancial developments and are not to be viewed as realistic predictions of what would have happened had unborrowed reserves actually been raised in the indicated quarters. A currency equation is added to the model for these simulations so that effects on the total money supply, rather than demand deposits alone, can be shown; but unborrowed reserves continues to be treated as exogenous.

The effects of increasing unborrowed reserves are similar for each of the four starting points—they are almost identical for the dollar variables, and decrease slowly through time for interest rates.¹⁹ The initial impact on interest rates is large—roughly 0.75 percent for the Treasury bill rate—but quickly drops off to a much smaller “permanent” impact. The initial impact on demand deposits plus currency is only about twice the change in reserves, most of the reserve increase going into bank free reserves in the first quarter. Over the next three quarters, free reserves begin to fall, and the quantity of money rises further.

All the simulations depicted in Figure 26.3 take as exogenous unborrowed

Figure 26.3 Effects of a \$500 Million Increase in Unborrowed Reserves



reserves, which, as mentioned earlier, is one of a number of plausible "open market" variables. It would be useful to compare these simulation results with others in which other reserve variables are exogenous.²⁰

Notes

1. See "A Model of Financial Behavior," in James S. Duesenberry, Gary Fromm, Lawrence R. Klein, and Edwin Kuh, eds., *The Brookings Quarterly Econometric Model of the United States* (Chicago: Rand McNally, 1965), ch. 13. The revised version of this paper was completed in October 1965 and does not incorporate later research on money demand and supply or term structure published since then.

2. For some of the simulation runs below, a demand-for-currency relationship is added. Demand equations for savings shares and for business holdings of U.S. securities also appear below. However, the condensed model is self-contained without these equations.

3. Three necessary changes were: (1) replacing the average rate for private securities

by the very closely correlated U.S. long-term rate in certain equations; (2) replacing currency plus unborrowed reserves by unborrowed reserves alone as an exogenous "open market" variable (when a demand-for-currency equation is added to the condensed model, this substitution is not necessary); and (3) omitting (or using a proxy variable for) changes in bank loans as an explanatory variable in equations for bank borrowing and for excess reserves. These two equations were also combined into a single free-reserve equation in the condensed model.

4. The details of the way in which the two-stage procedures was applied are described in "A Model of Financial Behavior," pp. 486–88.

5. The expression above consistently understates required reserves by roughly \$500 million because of the omission of reserves required to be held against net interbank deposits. Changes in the expression above move very closely with changes in required reserves.

6. Because of the omission of interbank deposits (see note 5), the equation is inexact as to level by a fairly constant amount, although quite accurate as to quarterly first differences. Inaccuracies in the equation show up as differences between the values of RES_{NB} in the model and actual (seasonally adjusted) unborrowed reserves.

7. None of these measures, incidentally, is truly exogenous in the statistical sense of being unrelated to disturbances that affect current economic behavior. A model making some rough allowance for the influence of current conditions on policy variables might therefore be an improvement over the present one.

8. The problem of how U.S. security yields can serve to bring money markets, rather than U.S. security markets, into balance, is discussed in "A Model of Financial Behavior," pp. 482–86.

9. An appendix describing and listing these variables (plus others included in the earlier, nineteen-equation model) is available from the author on request. The appendix contains detailed specifications for each variable. Most of the variables are seasonally adjusted.

10. The specific variable is

$$0.114 \sum_{i=1}^{20} (0.9)^{i-1} GNP_{t-i}$$

where GNP is in millions of dollars, seasonally adjusted at annual rates, and time is measured in quarters. The geometrically declining weights approximate Friedman's "permanent income" weights. See Milton Friedman, *A Theory of the Consumption Function* (Princeton, NJ: National Bureau of Economic Research, 1957), pp. 142–47.

11. The reasons for, and drawbacks of, using this proxy variable are discussed together with all the other behavioral assumptions and variables in "A Model of Financial Behavior," pp. 465–75 and 489.

12. The form of the free-reserve equation is quite close to—and was influenced by—that of James A. Meigs, "Free Reserve and the Money Supply" (Chicago: University of Chicago, 1962). George Morrison, "Liquidity Preference of Commercial Banks" (Chicago: University of Chicago, 1962), offers an excellent study of how excess reserves also influence the formulation of the free-reserve relationship.

Combining excess reserves and member bank borrowing into the single free reserve variable does not seem to do any violence to 1954–62 patterns of change. It is probably worth bearing in mind, however, that country banks hold a large proportion of excess reserves and account for only a moderate proportion of borrowing. During some periods, differences in behavior between country and city banks might lead to aggregation bias in a single free-reserve relationship.

13. This explanation of the differential is akin to the "expectations hypothesis" inves-

tigated by David Meiselman, *The Term Structure of Interest Rates* (Englewood Cliffs, NJ: Prentice-Hall, 1962). John A. Wood, "An Econometric Model of the Term Structure of Interest Rates," compares this explanation with rival ones, theoretically and in considerable empirical detail.

14. See Shirley Almon, "The Distributed Lag Between Capital Appropriations and Expenditures," *Econometrica* 33 (January 1965). The term-structure equation in the condensed model differs from the one in the full model in that the latter equation placed more severe restrictions on the weights. The weighting patterns in the two equations turned out to be similar, however.

15. See "A Model of Financial Behavior," pp. 526-27.

16. For other examples of the same procedure see Lawrence Klein, "A Postwar Quarterly Model: Description and Applications," National Bureau of Economic Research, Studies in Income and Wealth 28, *Models of Income Determination* (1963), pp. 11-36; and Daniel B. Suits, "Forecasting and Analysis with an Econometric Model, *American Economic Review* (March 1962): 104-32. The Suits procedure of adding changes in calculated values to previous-period actual values amounts to adjusting constant terms.

17. Possible examples of such influences, cited earlier, are expected price changes, levels of consumer and business debt, and stocks of U.S. securities or of real assets.

18. A description of the program is available on request.

19. This similarity over time contrasts with findings of Roland L. Teigen, "A Structural Approach to the Impact of Monetary Policy," *Journal of Finance* (May 1964): 284-308, based on a two-equation model, in which the effects of identical policy measures vary widely depending on initial conditions. In the present model the decreasing impact over time on interest rates is due to the fact that it is ratios of reserves or deposits to "wealth" or weighted-average income that are linearly related to interest rates.

20. [The subsequent sections on other policy instruments and complete system simulations have been deleted.—Ed.]

BARRY BOSWORTH AND JAMES S. DUESENBERY

Financial Market Clearing with a Full Financial Structure

(1973)

I. Introduction

A great deal of progress in building up the various strands of theoretical and empirical work on financial behavior has been made by the builders of financial models—particularly the Fed-MIT-Penn consortium. Starting with an empirical version of the Keynesian theory of interest rates in which a single interest rate is determined by the supply and demand for money, the financial models have been gradually expanded. The supply of money has been made endogenous, and in the process a more realistic and complete treatment of the commercial banking system has been introduced into the models. In recognition of the special characteristics of the mortgage markets, the more recent versions of the Fed-MIT-Penn model include a very elaborate treatment of the mortgage market and the thrift institutions.

Yet much remains to be done. The models presently in use still begin with a Keynesian supply and demand for money approach to interest-rate determination. The multiplicity of existing interest rates then is dealt with by subsidiary equations of the term-structure type—homogenizing the security markets into a single bond market. For Keynes that was a very ingenious simplification, and it is useful in empirical models that are meant to be simple and compact. But once we embark on the task of giving a detailed treatment of the structure of the

Excerpted from Barry Bosworth and James S. Duesenberry, "A Flow of Funds Model and Its Implications," in *Issues in Federal Debt Management*, proceedings of a conference sponsored by the Federal Reserve Bank of Boston, Conference Series 10 (Boston: Federal Reserve Bank of Boston, 1973), 39–149. Sections I, II, and III have been omitted except for a short introduction from Section I. Also omitted are appendices A and B, which detail the model's equations and the simulations.

financial system, there is a strong case for building a model that starts from the beginning with a clearing of markets of particular types of securities. The model presented here follows that approach.

The need for a model that deals directly and explicitly with the supply and demand for specific types of securities is also emphasized by the problems that arise in the evaluation of the variety of reform proposals now under discussion. The model presented here has been developed to facilitate the analysis of the effects of such proposals. The model deals explicitly with the market-clearing process for a number of different types of financial assets. It is based on the flow-of-funds data and uses a flow-of-funds approach but with considerable consolidation. Of course, flows of funds include not only the disposition of the current surpluses and deficits of spending units but also the shifts of assets and liabilities among sectors arising out of the reallocation of existing portfolios. But to provide meaningful control totals and to emphasize the link between the "real sector" and the financial sector, the model is linked to the national income accounts framework by incorporating NIA surpluses and deficits of the sectors as the basic measure of net claims on the capital market. Finally, the model provides a simplified analytical framework for examining the allocation of credit among potential users.

The reader who is familiar with other financial models will note a number of points at which our model differs from the ones now in use. First, the model is organized in terms of the supply and demand balance for particular types of securities. If financial structure makes a difference, it must do so, we believe, either by affecting interest rates in particular markets or by affecting the extent of credit rationing in those markets. In either case, structural changes will exert their influence through their effects on the supply or demand for different types of securities. The alternative approach used in some other models is to organize the model in terms of supply and demand for money and a term and risk structure approach to interest-rate differentials. Other factors can be grafted onto the framework of the term-structure equations where necessary. That approach avoids some of the problems posed by weaknesses in the data base and for certain purposes can be very useful. But for our purposes, it is not satisfactory because it does not show explicitly how structural changes affect particular markets.

Second, our special interest in short-run cyclical changes has led us to give considerable emphasis to the dynamic effects of short-run changes in the flows of funds arising from the sector surpluses and deficits. In the longer run, the relative stocks for different kinds of assets and liabilities play a dominant role in determining interest rates. But the flows assume relatively greater importance in short-run cyclical changes.

In the following sections of this paper some of the implications that follow from a flow-of-funds analysis of the financial system are examined in greater detail. The distinction between a money-market model and a bond-market model

is the topic of the following section. The choice between these two approaches does not involve differences in interpretation of the basic monetary theory. Rather, they are different views of the same financial mechanism. The primary issue in choosing between the two approaches hinges on the extent to which financial assets other than money can be homogenized into one asset, "bonds."

The importance of the distinction between the stocks of financial assets outstanding and their rate of flow through the markets is examined in section three. The general model of portfolio balance is modified in order to include elements which reflect current flows of savings and investment behavioral response lags, and the use of liquid asset stocks as a buffer against unanticipated changes in income and expenditures.

A summary outline of our model of the credit markets is given in section four. The model is based on a consolidation of the flow-of-funds as currently published by the Board of Governors of the Federal Reserve System. This section includes a brief description of the major market participants and financial instruments that are treated explicitly in the model. The following section five outlines the general considerations that guided the specification of the individual equations. In section six, several individual sectors that are of special interest are discussed in greater detail. A complete list of all the equations of the model is provided in Appendix B.

The concluding section discusses some illustrative simulation results from the model. Multiplier responses to changes in government expenditures and unborrowed reserves are presented as simplified measures of the implied effectiveness of monetary and fiscal policy. A FNMA purchase of residential mortgages in exchange for increased issues of government securities is examined as illustrative of a policy change that is contained completely within the market for "bonds."

[Note: Sections II and III are omitted—Ed.]

IV. The Structure of the Financial Model

Unlike most existing models of the financial process, the present model reflects a primary concern with the savings-investment function of the financial system. Thus, it begins with the sector surpluses and deficits of the national income accounts. The model itself can be viewed as an elaboration of this basic savings and investment accounting identity. In the absence of valuation problems, these income flows are measures of the net increment to financial assets and liabilities for each individual sector. The treatment of these sector surpluses or deficits implies that the underlying income and investment flows are predetermined for purposes of this financial sector model.

They are, of course, endogenous elements of a complete income-expenditure model. We are mainly concerned here with the financial system, but in order to

conduct simulation experiments that take account of the mutual feedbacks between the financial system and the income-expenditure system, we have constructed an aggregate-demand model. Although it is, by today's standards, a relatively compact model (85 equations), it follows the outlines of the widely known large-scale models. The model includes expenditure equations for all the sectors whose surpluses and deficits appear in the financial model. It also, of course, provides equations that determine the intersectoral distribution of income. Finally, it contains 25 equations for determination of wage and price-level changes. Because the aggregate-demand model contains no important new wrinkles, we shall not discuss it in detail here but turn at once to the structure of the financial model.

The savings-investment identity that provides the basic organizational framework of the financial model is shown in the following equation:

$$\text{DEFB} + \text{DEFGF} + \text{DEFGSL} + \text{DEFFOR} - \text{SURH} - \text{STAT} = 0$$

Five major sectors are recognized, and the classification of each as a deficit or surplus sector is simply one of expositional ease. The deficits of business, federal government, state and local governments, and the foreign sector are equivalent to household savings plus the statistical discrepancy.

The definition of each sector's deficit in terms of national income account items is shown in Table 27.1. There are some minor divergences from the accounts, which are spelled out at the bottom of the table. The most important of these is the division of residential construction and capital consumption allowances between business and households, and the inclusion of foreign direct investment and profit repayments as nonfinancial flows of the business sector. As a result of this method of relating the financial and real sectors, the present model of the financial sector is fully consistent in its basic approach to most existing income-expenditure models, and analytical results can be carried over from one to the other.

In its treatment of financial assets and liabilities, the model follows the general structure of the flow-of-funds accounts. However, the present structure of the accounts is too large and complex to provide a useful summary framework for examining the allocation of credit. Without aggregation any financial model quickly founders in a sea of different assets and institutions. The present model reflects our attempts to obtain a strategic simplification of the credit markets, and it is intended to be illustrative of an underlying framework for evaluating a wide range of different issues.

Asset Categories

The model differentiates among four major categories of financial assets: deposit accounts, negotiated loans, liquid marketable securities, and income-yielding long-term market assets.

Table 27.1

Sources and Uses of Funds by Sector (linking the real and financial sectors)

Business Sector Deficit		30.4
Gross domestic investment ¹	117.5	
Direct foreign investment ²	3.6	
less: Retained earnings	15.4	
Foreign branch profits ²	2.3	
Inventory valuation adjustment	-4.4	
Capital consumption allowances ¹	77.4	
Federal Government Deficit		12.9
Total expenditures	204.5	
less: Total revenue	191.6	
State and Local Deficit³		3.9
Total expenditures	132.1	
Retirement credit to households	6.8	
less: Total revenue	135.0	
Foreign Deficit		-0.9
Exports	62.9	
Foreign branch profits ²	2.3	
less: Imports	59.3	
Transfers from U.S.	3.2	
Direct foreign investment	3.6	
Household Surplus⁴		51.0
Disposable income	689.5	
Retirement credit from S & L governments	6.8	
Capital consumption allowances	9.0	
less: Personal outlays	634.7	
Residential home purchases	19.6	
Statistical Discrepancy (NIA)		-4.7

¹Excludes component of residential investment and depreciation attributed to household sector.

²Included herein but not in NIA definitions.

³Differs from NIA definitions by inclusion of pension fund payments to established funds as an expenditure.

⁴See footnotes (1) and (3).

Sources: Tables 4, 6, 10, 12, 13, and 14 of National Income and Product tables, *Survey of Current Business*, April, 1972; and Table 1 of Flow of Funds, 4th Quarter 1971.

Deposit Accounts

These include demand and time deposits at commercial banks, saving and loan shares, savings bank deposits, and life insurance company reserves. Their most distinguishing characteristics as an asset are a high degree of liquidity and the absence of any risk of capital gains and losses. The yields on these assets, while competitive in the long run, display far less cyclical variation than yields on marketable securities. Second, they represent the major portion of the liabilities of those financial intermediaries whose investment policies differ substantially from those of their depositors. Thus, for example, the allocation of household assets between deposit accounts and other instruments will be shown to be of primary importance to the mortgage market.

Negotiated Loans

These include consumer credit, residential mortgages, and bank loans to business. These instruments are characterized by very limited liquidity because of the absence of a developed resale market. They are dominated by the institutions on the lending side, and the equilibrating of demand and supply in the short run is heavily influenced by nonrate factors such as credit rationing, institutional rigidities, and government regulations. Negotiated loans are not in most cases general-purpose financial instruments; and the portfolio selection model, used for other assets and liabilities, is frequently inappropriate for both demand and supply.

Liquid Marketable Securities

These include short-term U.S. government securities, commercial paper, and short-term state and local debt.¹ These assets are characterized by very substantial short-run variations in the volume outstanding and in their distribution among types of holders, and together with deposits provide the major source of liquidity. Since liquid assets are useful primarily as a buffer against unanticipated future payments, the pattern of such holdings will be heavily influenced by short-run flow disturbances.

Income-Yielding Long-Term Financial Assets

These include U.S. bonds, corporate bonds and stocks, commercial mortgages, and state and local bonds. Unlike negotiated loans, these securities are frequently traded in impersonal competitive markets. On average they provide a yield substantially above that of liquid assets, but only at the risk of substantial short-run capital gains and losses. The decision to hold such securities is dominated by income considerations of relative yield and risk.

Although these securities can be distinguished on the supply side by issuing

sector, they are highly substitutable for each other from the viewpoint of the marginal purchaser. As a result, the observed market-clearing rates are highly colinear with each other, and it is difficult to estimate stable demand functions. In general, because of this high degree of substitution, we find a limited economic interest in the composition of these asset holdings by an individual investor class. However, at some stages in the model it is of interest to separate out one or more of these assets (e.g., municipal bonds) for special treatment.

The above classification does leave a residual category of financial assets. The residual group combines a large number of relatively minor items, the most significant of which are trade credit, unallocated assets, and the statistical discrepancies between the national income accounts' measures of sector deficits or surpluses and those of the flow-of-funds accounts. These assets are characterized by the lack of a measured market-clearing price that could be used to estimate market demand and supply functions.

In the introductory section we indicated that the lack of a homogeneous security market provided a primary rationale for examining the behavior of the bond market rather than simply the demand and supply of money balances. The above asset classification is intended to reflect the major areas among which the lack of homogeneity is of greatest interest. The usual portfolio selection model of financial analysis is most appropriate in the market for long-term marketable securities when relative yield and risk are of primary concern. The demand for liquid marketable securities, however, is heavily influenced by the magnitude of actual and anticipated variations in receipts and expenditures. Deposit accounts are of special interest because of the restricted nature of the investment decision of the financial intermediaries. The negotiated-loan markets deserve special treatment because of the importance of credit rationing, regulations, and institutional market practices.

Financial Market Participants

In addition to the five categories of ultimate savers and investors discussed earlier, the model has been expanded to include the activities of four financial intermediaries: commercial banks, savings and loan associations, savings banks, and life insurance companies. The model could obviously be enlarged to include others, such as pension funds, other insurance, or credit unions. However, at present these institutions either are not large enough to affect the model seriously or have asset structures similar enough to those of the holders of their liabilities so as not to seriously influence the performance of the model.

The four financial intermediaries that are identified specifically are of particular importance in the markets for negotiated loans. For example, they account for more than 80 percent of residential mortgage loans, and commercial banks dominate the markets for short-term business and consumer loans. These intermediaries also are strongly influenced by Federal regulations on portfolio composition,

both assets and liabilities, and restrictions on offered interest rates. The regulations governing commercial bank behavior are a major element of the mechanism by which monetary policy changes are transmitted throughout the financial system.

The resulting financial model is composed of a set of demand and supply equations for each of the major asset categories disaggregated among five nonfinancial sectors and four financial institutions. Since not every sector is active in each market and because they usually appear only as a supplier or demander of funds, the actual number of equations is substantially less than the number of cells implied by the full matrix of financial assets and participants.

V. Behavior of Individual Economic Units

An individual economic unit must make a large number of choices in adjusting its balance sheet to changes in net worth, interest rates, investment opportunities, and other factors. This decision process is too complex to be fully considered within a small statistical model that is to be applied to aggregate time-series data. To obtain useful results within the confines of the available data, some simplifying assumptions must be made in order to focus on those aspects of major economic interest. We have followed a practice of grouping alternatives into broad sets of similar choices, which are viewed as part of a recursive decision-making process of moving from the large to the small. For example, the individual consumer is viewed as making an initial allocation of his current wealth among current consumption, investment in physical assets, and investment in financial assets. The allocation among alternative choices within these major groups is viewed as a subsequent stage of the decision process. Our primary concern is with the secondary step of allocating net financial wealth among alternative financial assets and liabilities. But here, too, the approach remains quite aggregative.

The Determinants of Desired Stocks

The formulation of the demand for and supply of individual financial assets or a set of financial assets draws heavily on the model of portfolio selection developed by Markowitz, Tobin, and others. According to this view, the demand for a specific financial asset is a demand for a desired *stock* of the asset in question rather than a flow rate of purchase. Thus the demand of an individual investor is constrained by his net financial wealth.²

Individual assets and classes of assets are distinguished on the basis of relative yields, risks, and liquidity. The demand functions of individual actors in the financial markets differ in terms of the amount and composition of their real wealth; their "tastes" with respect to yield, risk, and liquidity; and in some cases legal constraints (e.g., the reserve identity for commercial banks or portfolio restrictions on savings and loan associations).

A direct measure is available only for the yield aspect of most assets. Since this is the current market rate, it is not the expected yield actually called for. This shortcoming is particularly important for long-term marketable securities, where the capital gain or loss component may be a major part of the yield.

But the data problem is even more severe for risk and liquidity where no direct measures are available. In cross-sectional analysis, where the emphasis is on explaining why asset structures of individual investor portfolios differ, the standard deviation of observed yields is a frequently used measure of risk. But risk is a difficult concept to quantify within a time-series model. The problem is complicated by the need to distinguish changes in relative rather than overall risk.

The present model incorporates risk and liquidity primarily as constant characteristics of an asset. Thus they serve as major criteria in the classification of individual assets and liabilities among different categories such as deposit accounts, liquid marketable securities, and long-term assets. Investor "tastes" for risk and liquidity then are implicitly reflected in the functions determining the behavior of these groups. Since a concept similar to the interest rate is not available to measure the return or benefits derived from liquidity or low risk, they may also be represented by the ratio of existing liquid (or risky) asset holdings relative to net wealth. To the extent that assets can be classified into categories of liquidity and risk, these compositional variables (e.g., the ratio of liquid assets to net worth) may reflect implicit costs and benefits to the investor of risk and liquidity. This implicit return aspect is a major behavioral rationale for the inclusion of existing stocks of other asset groups in the individual asset-demand equations.

Short-Run Adjustments

While the factors of relative yield, risk, and liquidity may provide an adequate explanation for long-run patterns of portfolio composition, they are but part of the explanation of short-run market patterns. First, investors cannot be expected to adjust their actual stocks instantaneously. Investor inertia, transaction costs, and uncertainty are all contributing factors. In addition, many securities do not have ready resale markets, and a complete adjustment must await the maturing of existing claims. Legal regulations may also hamper the adjustment process. Examples of this type are ceiling limits on deposit rates and restrictions of either a maximum or minimum nature on the proportion of an institution's portfolio that may be represented by a specific asset. These elements at times may impart a measure of discontinuity to individual demand and supply curves.

Second, the long-run stock analysis must be modified to allow for numerous short-term flow disturbances. In particular, liquid asset positions are dominated by unanticipated fluctuations in the real income flows against which they are designed to provide a buffer. Cyclical changes in retained earnings, inventory

investment, and unpaid tax liabilities are some of the more obvious examples within the business sector. The financial intermediaries are also faced with unanticipated changes in deposits and loan demand which must be matched by compensatory changes in other assets or liabilities.

Summary Form of the Typical Equation

In summary, the basic behavioral assumption that underlies the individual equation is one of the portfolio selection whereby the individual actor tries to align the distribution of the stocks of financial assets within his portfolio in response to relative yields. The response to changes in wealth and yields is specified to occur with a partial lagged adjustment. In addition, the actual short-run adjustment pattern is distorted by changes in nonfinancial flows.

These behavioral assumptions can be stated in equation form as follows: The desired stock of each asset or liquidity is assumed to depend upon a vector of interest rates, r ; a wealth constraint, W ; and other factors, X (e.g., income or transactions requirements):

$$A_i^* = a_i + \sum_j b_{ij} (r_j W) + c_i W + \sum_k d_{ik} \cdot X_k$$

The interest-rate terms are scaled by the net-worth constraint, and all of the equations are estimated in linear form. In those situations where liquidity is an important consideration, the ratio of liquid assets to wealth is included as a measure of the implicit yield on such assets. Because net worth is used as a scale parameter, it appears several times in the equation, and its net influence should not be inferred by reference to the c_i coefficient alone. The total wealth effect can only be deduced for specific fixed values of the interest-rate terms. Where significant, a trend term is included as proxy for other secular factors not specified in the equation. This prevents such influences from being attributed to the interest rates that have a strong trend component.

The short-run stock adjustment process is generalized somewhat to include the lagged stocks of other assets and various flow disturbance terms, Z .

$$\Delta A_i = \sum_j \lambda_{ij} [A_j^* - A_{j-1}] + \gamma_k \cdot Z$$

In addition, the asset equations for each sector are given a common structure to the extent feasible. This reduces the sensitivity of the equation results to the choice of which asset to treat as a residual.

However, the equation form does vary substantially among the various sectors in response to different structural restrictions on the actors. In individual situations, various symmetry conditions of rate response have been imposed by prior

restrictions. Variables were also excluded from the final equation when their coefficients were both small and insignificant.

Balance-Sheet Restrictions

The overall formulation of desired stocks and the adjustment to discrepancies between actual and desired stocks is sharply constrained by the need to maintain income- and balance-sheet restrictions at all points in time. Within a fixed net wealth constraint, an increase in the holdings of one financial asset must be matched by a corresponding decline in others or by an increase in liabilities. Compositional responses to changes in a specific interest rate or nonrate factor must sum to zero over the whole portfolio. This implies, at the extreme, that each individual demand equation must include the entire list of variables contained in the equations for competing assets. An alternative statement of the same point is that within a portfolio of n assets there can be only $n-1$ independent demand equations, since the equation for the final asset can be deduced by subtraction.³

There are several alternative approaches to the estimation of equations within the balance-sheet restriction. The first involves the estimation of $n-1$ independent equations. The equation for the n th asset is then implied as a residual. As a result, the residual-equations structure may be sharply distorted. For example, the cross effects of interest-rate terms may be quite diffuse so that they are statistically insignificant in equations for competing assets. The elimination of such terms, however, implicitly assigns all of the cross effect to the residual asset, since the sum of the coefficients must equal zero. The same is true of the adjustment process whereby the assets' own lagged stock is included. Perfect symmetry would require its inclusion in the other equations. Thus each equation in the set of $n-1$ must include the same set of right-hand variables.

The problem with the above approach is that it leads to a rapid proliferation in the number of coefficients to be estimated. With limited data the result is multicollinearity, a high risk of spurious correlations, and highly inefficient estimates. Alternatively, equations may be formulated in a very simple context, reducing the number of coefficients to be estimated but ignoring the complexities of the decision process that are frequently important.

A second approach involves the estimation of the entire set of n equations in a simultaneous-estimation procedure that incorporates all of the balance-sheet restrictions. This is obviously the preferred method of estimation when one is certain that the original specification is correct. But the combination of a large number of independent variables and probable errors in specification can wreak havoc with the estimates. A specification error in one subset of the equations will distort the results for all. It is difficult to evaluate individual equations, since coefficient standard errors are not available. In addition, the quality of the original data frequently does not justify an approach that gives so much freedom to the estimation technique in allocating rate effects.⁴

At this stage of the analysis we did not feel that our equation specifications justified use of the second method. We have followed a more eclectic approach of estimating the equations on an individual basis. Variables are frequently not carried over from equation to equation if they were not significant at a reasonable probability level.

An attempt was made to limit the number of independent variables in an individual equation to those of dominant importance. Simplifying assumptions not fully justified by theory were sometimes made if they reduced other problems (e.g., multicollinearity, spurious correlation, and autocorrelation). The procedure of limiting the disaggregation to major asset categories frequently reduced the number of required variables and simplified the equation structure.

In particular, the lagged stocks of all other assets were not always included in the individual equations. Since total net worth usually does appear, their absence only implies the lack of differential effects on the asset in question. For example, the absence of lagged time deposits in an equation for savings and loan shares only implies that their influence is no different from that of other deposits or market securities, or that the difference is not of major statistical importance. Frequently, a check was made to ensure that the implicit structure of the residual-asset category was not substantially different from that implied by a direct estimate. Thus the implied structure of the residual equation influenced but did not constrain the estimates of the other equations. We readily confess that the equations are not reality but only illustrative of some of the major forces.

Market Clearing

In principle the procedure outlined above should lead to a system consisting of demand or supply equations for every sector (and financial intermediary) and every asset type. (Of course there would be some blanks since some assets do not appear at all in the balance sheets of some sectors.) In a theoretical model with no residual category, no error terms, and no rationing, net supply of each asset could be set equal to zero. The simultaneous solution of the whole set of equations would then produce the set of equilibrium interest rates. The model proceeds along that line but does not follow it to the end. Most of our equations are in fact supply and demand equations for assets and liabilities, sector by sector. But for a number of reasons we have taken a somewhat different approach to market clearing.

In each market the supply or demand equation for one sector has been omitted and a rate equation fitted instead. If the conditions mentioned above were satisfied, this would simply amount to rewriting the missing equation with the rate instead of the quantity on the left-hand side. For example, there is no equation for the supply of bank loans to business. There is an equation for the demand for bank loans and an equation for the bank lending rate containing the quantity of bank loans on the right-hand side. The solution of the two equations (for given

values of the other variables) may be regarded as market clearing through the equating of supply and demand. In fact, for a variety of reasons the rate equations are not strictly simple demand or supply equations solved for the rate. In particular, the mortgage-market equations are organized to permit some short-run rationing and a corresponding short-run disequilibrium in the rate. In the case of the bond markets, the household-demand-for-bond equations are replaced by rate equations, but the included equations have to be regarded as reduced forms from the solution of a larger system, because the yield on equities cannot be used.

VI. Special Features of the Model

The authors have spent several years building this model, so to us everything about it is special, but the financial-model buff will soon recognize that many of the equations are essentially old stuff—differing in detail but not in essence from the treatment of corresponding sectors in other models. In three areas—commercial banking, the bond markets, and the mortgage market—we have departed from standard practice to an extent warranting special notice even in a short outline of the model.

Commercial Banking

In spite of the rapid growth of other financial institutions, commercial banks remain at the heart of our financial system. They hold a wider range of assets than any other class of institutions and deal on the deposit side with all sectors of the economy. Because the business sector uses variations in bank borrowing to buffer short-term fluctuations in surpluses and deficits, banks transmit the effects of short-term changes in business financing needs to the rest of the market. At the same time, Federal Reserve open-market operations are directly reflected in bank reserve positions, and the banking system's response to changes in reserve positions links Federal Reserve action to the rest of the market.

Our model of the commercial banking system differs fundamentally from others in the nature of the output. The 17 equations devoted to the commercial banking system do not explain the money supply. Instead they represent—when taken together—the banking system's demand for various kinds of assets. By adding equations from other sectors, one can deduce the determinants of the money supply, but only as a memo item. Banks enter into the model directly as demanders of assets—business loans, long- and short-term Federal securities, municipal bonds, etc.—and as suppliers of such liabilities as negotiable certificates of deposit.

Second, in determining the actions of banks we have placed great weight on the tension between the demand for business loans and what might be called the passive supply of funds—the supply resulting from increases in unborrowed

reserves, and time deposits (without a change in rates). This excess loan demand equation brings together the two driving forces mentioned above—business loan demand and open-market policy. Though subject to many qualifications, we have accepted the hypothesis that, primarily for reasons of long-term profit maximization, banks will attempt to accommodate the bulk of the fluctuations in their business customers' demand for loans.

Rates will be adjusted to reflect the cost of funds and the competitive position as reflected in the amount of excess loan demand. There also may be marginal rationing. But for the most part, if a customer is willing to pay the rate (including, of course, a sufficient margin over the cost of funds to cover any costs and risks involved) the loan will be granted. To balance supply and demand for funds it will be necessary to make adjustments elsewhere in the portfolio. Those adjustments include sales—or reductions in purchases—of securities, increases in rates for consumer time deposits, CDs, Eurodollars, or increased borrowing from the Federal Reserve. The equations for bank deposit rates and for assets other than business loans are strongly influenced by the excess loan demand variable. To put it shortly—and with some lack of precision—when the Federal Reserve provides banks with sufficient reserves to accommodate business loan demand passively, the rest of the market is insulated. When Federal Reserve policy does not provide enough reserves, the excess loan demand is passed to the rest of the market through bank sales of securities or bank issues of additional short-term liabilities.

An important variable in determination of money-supply bank assets (and at times a variable used rightly or wrongly as a target by the Federal Reserve System) is the level of free reserves. Our treatment of the free reserves starts with a fairly standard stock adjustment mechanism in which the desired level of excess reserves (scaled to adjust for demand deposit reserve ratios) is a function of the bill rate; and the change in free reserves is a fraction of the gap between the target and the previous period's actual reserves. Adding the lagged stock to both sides makes actual free reserves positively related to bill rates, the scale of demand deposits, and positively related to the last period's actual free reserves. This is a fairly standard approach, but it neglects important dynamic elements. We find statistically, and we believe that we are in accord with other evidence, that the *level* of free reserves is strongly influenced by changes in excess loan demand.

We have reflected Federal Reserve pressure to limit member bank borrowing by introducing a variable that is zero when free reserves are positive (for the system), but has a negative value when system free reserves are negative. Disregarding the rest of the equation for the moment and considering only member bank borrowing, the equation suggests that a one-time blip from zero to a positive value of excess loan demand will cause banks to borrow. In the following period about 60 percent of the borrowing will be repaid, and as long as excess loan demand remains zero, the borrowing will fade away in ensuing quarters.

While the coefficients may give excessive precision to the time path, the general idea appears to be consistent with discount window policy and bank appreciation of it. It will be noted that in this dynamic part of the equation, the level of free reserves (or borrowing) is related to the change in excess loan demand—that is, to flows of lending and open-market purchases. When excess loan demand becomes positive and increases steadily, borrowing will tend to rise cumulatively until the lagged stock terms balance off the flow terms.

The reader will note that interest-rate terms play a relatively small role in this equation. It is usual to suppose that member-bank borrowing is sensitive to the spread between the discount rate and the funds rate. The funds rate itself is, however, determined by the interactions among the banks that have been aggregated here. Indeed, in a more disaggregated model the funds rate would become an endogenous variable explained in large measure by the same variables that are supposed to determine the quantity of borrowing. In such a model the discount rate (if regarded as exogenous) would appear as a determinant of both the quantity of borrowing and the funds rate. In our view, however, it would appear more significantly as a determinant of the funds rate than of the amount borrowed. Moreover, there is considerable doubt as to the legitimacy of regarding the discount rate as an independent variable, since the discount rate is often adjusted to keep it in line with the funds rate. Thus, while it is easy to find statistically significant coefficients on the discount rate, their economic significance is doubtful. The bill rate can be viewed as a measure of the costs of holding excess reserves for liquidity purposes.

To sum up, the banking system plays a major role as a demander of securities and as a supplier of time deposits and short-term marketable securities. Bank action in these markets is driven by the interaction of business loan demand—generated in turn by business surpluses and deficits—and by Federal Reserve open-market operations.

Marketable Securities

In the case of marketable securities, we have estimated ordinary supply and demand equations for total long-term marketable securities, total short-term marketable securities, and municipal securities for sectors other than households. The resulting net supply of each type of securities must then be held by households. As noted above, we could have completed the model by computing the household demands for securities and setting supply equal to demand. Instead, however, we have computed equations for various interest rates in which the rates appear on the left-hand side, and the quantities of securities (actually various portfolio ratios) that must be absorbed by households—the net supply from other sectors—appear on the right-hand side.

There are several reasons for this choice. First, it is statistically more efficient.

We have a linked set of household portfolio equations, including those for several types of deposits and for different kinds of marketable securities. In these equations the deposit rates are exogenous, since they are influenced only slightly by short-period movements in household portfolios. On the other hand, the quantities of securities to be absorbed by households are largely determined by events in the nonfinancial world and by monetary policy decisions that are little influenced by household portfolio decisions in the short run. The rates required to induce households to take the necessary amounts of securities are determined by household action, including random shifts in the portfolio tastes of households. In OLS estimates there will be less simultaneous-equation bias when we normalize on the rate instead of on the quantities.

In effect, we have started from a set of simultaneous portfolio equations for households in which the quantities are functions of the yields on the different assets. Taking the quantities as predetermined, we have then solved for the yields in terms of the quantities. The yields that appear on the left side are current market yields. The right-hand-side variables therefore include not only the composition of portfolio variables but also the measures of expected price changes that influence current security prices.

Variables intended to represent interest-rate expectations appear in a number of equations for the supply of or demand for securities. On the supply side the timing of corporate bond issues is significantly influenced by the rate of change of interest rates. Issues are deferred when rates move up rapidly and brought forward as rates decline. As one might expect, corporate short-term borrowing responds in the opposite way. State and local long-term borrowing responds to the rate of change of rates in roughly the same way as corporate borrowing.

On the demand side we find that the choice between long- and short-term securities by mutual savings banks and savings and loan associations is influenced by the spread between bond yields and a moving average of short yields.⁵ In choosing between long and short securities the household sector, represented by equations for long and short rates, appears to respond to (1) the difference between bond yields and a moving average of short rates and (2) the rate of change of short rates.

There has been a good deal of debate in recent years over the merits of the so-called expectational theories of interest rates and the theories that emphasize the importance of the composition of securities in the market. Our model indicates that both factors are important. The moving averages of short rates that appear in the expectational models show up as significant in our equations of bond yields. But the composition of the volume of securities also shows up—as portfolio theories suggest it should—as an important factor. The simulations described below indicate that the cyclical swings in the relative volume of long- and short-term securities play a considerable role in producing term-structure changes.

The Mortgage Market

The demand for mortgages (supply of mortgage funds) comes primarily from savings and loan associations, mutual savings banks, life insurance companies, commercial banks, and Federal agencies. Without going into details, it is fair to say that except for the exogenous elements in FNMA and FHLB policy, the mortgage-demand equations are fairly straightforward examples of the general class of portfolio adjustment equations described in the previous section. Since the major purchasers of mortgages are intermediaries, the demand for mortgages is, of course, heavily influenced by the flow of funds to the intermediaries and thus ultimately reflects (1) household portfolio decisions, (2) Federal Reserve controls on the growth of banking assets, and (3) competition by corporations for short-term funds from banks and long-term funds from life insurance companies. While a chain of interactions resulting from those considerations is fairly elaborate, its basic logic is fairly straightforward and well understood.

The supply of mortgages (demand for mortgage funds) is more complex and less well understood and has received remarkably little attention in the literature. In the long run it seems reasonable to regard the supply of mortgages as dependent on the demand for the underlying capital—housing units—and by the portfolio choices of actual or potential owners of owner-occupied or rental housing units (and also in the aggregate by the forces governing the mix of owner-occupied and rental housing). Unfortunately, our knowledge of the ultimate determinants of housing demand is very limited, particularly in regard to the influence of a change in mortgage interest rates.

Moreover, while the demand for mortgage funds is basically related to the value of the stock of housing, much of the adjustment of the stock of mortgages through the stock of housing is associated with the refinancing connected with change of ownership. The rate of sale of existing houses fluctuates in the short run with the rate of construction of new units. Thus new building contributes to mortgage demand directly—since new units must be financed—and indirectly through its effect on the refinancing of old units. When the rate of home building increases, the percentage rate of growth of mortgages outstanding will tend to increase for both reasons.

Most of the observed fluctuations in the rate of home building in the postwar period have resulted from fluctuations in the supply of mortgage funds with a good deal of rationing. Observed changes in the rate of building therefore tell us very little about the demand for new construction. In the very short run, however, it can be argued that—in the absence of rationing—builders will tend to expand their activities when vacancies are low and contract them when the vacancy rate is high. The vacancy rate can therefore be used as a measure of short-run variation in the position of a demand function for mortgage funds. We can therefore write

$$\Delta\%MTGR = f(VAC, r_{mort}, r_{mrk}) + \text{trend}$$

where the interest-rate terms reflect the effect of interest rates on home occupancy costs and on the optimal leverage ratio, and the trend takes account of rising capital values and the "maturation" of mortgage portfolios in the post-war period.

If we supposed that the mortgage market was always cleared by prompt changes in interest rates, we could estimate the parameters in the demand function and determine the mortgage interest rate by setting the demand function equal to the supply of mortgage funds. It is clear, however, that mortgage rates do not change quickly enough to clear the market when the supply of mortgage funds shifts rapidly, as it often does. We assume, therefore, that when there is a gap between the supply and the demand for mortgage funds, lenders shift the rate in the appropriate direction but not enough to eliminate the gap. Second, we assume the lenders lend the amount consistent with their supply function at the new rate, rationing out the excess demands. Third, we assume that the rate of change of the rate will also be affected by the differential between existing mortgage rates and competing asset yields and by the rate of growth of the intermediaries' total portfolios. A combination of the considerations determining the demand for mortgage funds and the rate adjustment considerations just mentioned leads to our equation. This is, of course, a very crude representation of a very complex process, but it does seem to catch the major factors at work in the mortgage market.

The Link from the Financial to the Real Sector

Changes in financial variables impinge back on the real sector through three aggregate demand categories: residential construction, business fixed investment, and state and local governments' construction expenditures. For the most part these equations follow the empirical work of previous models and require few specific comments.

The residential construction equation simply translates a given change in the mortgage stock into a corresponding amount of expenditures. Since the expenditures are measured at annual rates, the equation implies that about 50 percent of the increase in the mortgage stock at the margin is reflected in higher construction in the current period, with a further 25 percent in the following six months. The proportion of mortgage lending allocated to new construction versus the purchase of existing homes rises during periods of rapid household formation. Also, the market for new housing appears to be more sharply affected by increased lending costs.

We also found it necessary to adjust the data of 1970 to 1971 for a very substantial rise in the refinancing of mortgages issued during the previous tight-money period. Ideally it would be preferable to incorporate this refinancing

phenomenon within the equation itself, but at present the number of observations is too limited to obtain meaningful results. The importance in recent years of refinancing is evident in the 237 percent increase between 1969 and 1971 in mortgage assets by savings and loans originated for purposes other than the purchase of a new or existing home.

The business-investment equations closely follow the neoclassical formulation used empirically by Bischoff in the FRB-MIT-PENN model. One implication of his particular formulation is that the effects of interest rates will be delayed behind those of output. Our equations differ only in two respects. First, the equations are not of a pure accelerator type where investment is related only to *changes* in the desired stock; they also include a level-of-output term. Second, our formulation of the firm's discount rate uses only the corporate bond rate with a coefficient of 1.0. Bischoff also includes a coefficient of 1.0 on the dividend-price ratio with a coefficient of 2.0 on the bond rate.

The state and local construction equation relates expenditures to a moving average of GNP (as a general scale variable) and interest rates. We have also included a measure of those Federal grants-in-aid that can be used for construction outlays.

As with most existing models, these linkages to the real sector are not fully satisfactory. We do not adjust the nominal interest rate for price effects, as required by a real rate-of-interest formulation. Yet we firmly believe that if the rate of inflation affects the nominal rate of interest, it must do so through the demand for physical assets. Thus we do not include the rate of inflation in the interest-rate equations, since total *financial* wealth is used as the balance-sheet restriction.⁶ Since the rate of inflation can normally be expected to offset some of the influence on the real rate of interest of a changing nominal rate, our investment equations may overstate the influence of financial market changes on real output. On the other hand, we have not included a capital-gains impact on consumption, as has been done in some of the larger models.

The Link from the Real to the Financial Sector

Within this model, the process by which events in the real sector affect the financial sector is more complex than is implied by models that utilize the aggregate demand and supply for money. This complexity results from the fact that the distribution of income and expenditures among the major sectors as well as the level of aggregate demand influences the supply and demand for various types of securities.

The business sector finances fluctuations in its deficit primarily through variations in the amount of long-term debt and bank loans. State and local governments also are heavily dependent on the longer-term capital markets. At the other extreme, the Federal government meets most of its immediate financing needs through its direct access to the short-term securities market. Such distinc-

tions would be of little importance if the markets for financial assets other than money really were homogeneous, as implied by a money-model approach, but this view is not supported by our empirical results.

On the savings side, households dominate the market for interest-bearing deposits that are of such importance for the residential mortgage market and home building. In addition, the link between household savings on an income basis and their demand for financial assets is not a simple one. While their current consumption and investment in residential structures typically match the major proportion of their income flow, many of these expenditures are not financed out of current income and thus need not be offset by a reduced rate of purchase of financial assets. Consumer credit and mortgages are two financial liabilities that are closely linked to the purchase of real assets. Most households do not view such debt as simply the negative equivalent of bonds or deposit accounts. Thus they are not treated as homogeneous elements of the households' decision with respect to the allocation of their financial wealth.⁷ A related matter, the pattern of sector deficits and its implications for credit markets and interest rates, is discussed in the following analysis of simulation results.

VII. Simulation Results

The major characteristics of the model can be summarized by examining results of several standard "multiplier" simulations. These examples provide an opportunity to trace through the flow of the model and more adequately highlight the dynamic patterns of responses implied by the individual equations. All of the following exercises use data of the 1965–70 period as the baseline or control simulation. Consequently the results reflect the specific institutional framework that existed during the period. Because of major nonlinearities associated with rate ceilings and changes in regulation that occurred during that period, the multipliers obtained for that period cannot be viewed as being fully applicable to all other periods.

Unborrowed Reserves Multiplier

Within the present structure of the model, changes in unborrowed reserves are the primary index of the effectiveness of monetary policy. The results of a simulation of a \$1 billion increase in unborrowed reserves are shown in Table 2 of Appendix A.⁸ To put the magnitude of this increase in perspective, it is about a 5 percent increase and can be compared to the average annual increase of \$1.5 billion between 1965 and 1970—the period of simulation.

The use of the six-month period introduces some simultaneous—within-period—feedbacks, which somewhat blur the causal sequences for our simulation results. However, the model's first-period responses show how the effects of changes in

unborrowed reserves are transmitted through the financial system into the real system and back again. The Federal Reserve open-market purchase in itself increases demand for government securities while at the same time increasing bank reserves. Banks respond to the improved reserve position, in part, by acquiring additional short-term securities. This results in a sharp decline (100 basis points) in bill rates and bank CD rates. The fall in short rates leads to substantial shifts of funds into time deposits and shares at thrift institutions and commercial banks. While the rise in unborrowed reserves and the inflow of time deposits permit a large increase in bank earning assets, business loan demand is little changed. Our model of bank behavior implies that, since the excess loan variable has shown a sharp decline, Federal funds rates will fall and free reserves will increase. The simulation shows that in the initial period about half of the \$1 billion reserve injection is absorbed into free reserves. The temporary increase in free reserves is drawn down to approximately the initial position in the next two periods.

The increase in commercial bank reserves strengthens commercial bank demand for state and local securities, which helps to produce a 60 basis point drop in the rates for those securities. The shift of household funds into commercial banks and thrift institutions leads to a rise in mortgage lending and residential construction of more than \$1 billion in the initial period. The interest rate decline also generates an increase of more than \$1.5 billion in business fixed investments, while the resulting increase in income increases consumer expenditures by \$1 billion. The total first-period rise in GNP is a little more than \$3 billion. In the first period these real-sector changes have limited financial implications.

An interesting side effect of the reserve injection is the expectationally induced shift in corporate financing. In spite of the sharp fall in short rates, corporations raise \$1.1 billion more in long markets and correspondingly smaller amounts in short markets. This shift is the result of the expectations effects induced by the sharp decline in current market rates. And, of course, the shift in corporate financing toward the long end retards the decline in long rates.

The impact of monetary policy on real output is spread over a long period; real output reaches a peak at the end of two and a half years. However, the maximum change in real output is a very substantial \$20 billion. There is an immediate increase in residential construction in the first few periods, with a peak of \$3.2 billion after 18 months. The long lag in the total monetary impact is accounted for by business investment, which reaches its peak increase of \$7.3 billion at the end of three years. The increase in state and local construction is also very gradual.

The impact on output does not appear to be greatly dissimilar from those reported in some other studies. The total effect on real output is close to that found by Gramlich for a reduced form of estimates, although the lags reported here appear to be somewhat longer. However, the impact is greater than that reported for previous versions of the FRB-MIT-PENN model. This appears to be

the result of a stronger response of business investment to interest rate and output changes. This is amplified by a greater long-term impact of the policy change on market interest rates. The interest-rate response is heavily conditioned by the composition of debt issued in the capital markets; this aspect will be discussed more fully at the end of this section.

The policy change results in a substantial shift of deficit and surplus positions of the business and government sectors. The sharp rise in business investment results in much higher levels of business long-term borrowings. On the other hand, with expenditures being largely exogenous, substantial budget surpluses are generated by the Federal government. This is reflected in the financial sector in a decline of outstanding short-term Federal securities. Thus the particular assumptions of this model with regard to debt management result in a substantial maturity redistribution of credit-market assets. This pattern is amplified by the increase in state and local bond issues resulting from higher capital expenditures.

The nonbank intermediaries realize a higher level of deposit liabilities over the period of simulation. The most rapid deposit growth is concentrated in the first two years. But a major portion of these deposits are converted into larger holdings of mortgage assets with relatively small increases in their holdings of credit-market assets. The conversion of deposits into mortgages is facilitated by the fact that the mortgage rate initially declines by less than the bond rate and higher housing-vacancy rates begin to have a significant depressing influence only in the second and subsequent years. Life insurance companies do increase their holdings of long-term credit market assets; and FHLBB advances to savings and loans decline because the rate charged on these advances was held at its former exogenous level, which has the effect of making such loans unattractive to S&Ls as market rates fall.

The above portfolio adjustments of borrowers and other lenders result in reduced household holdings of both short- and long-term securities for the first three years. But thereafter, their holdings of long-term securities rise and their holdings of short-term securities continue to decline. After six years total long-term assets have increased by \$6.1 billion, all of which has been absorbed by households. On the other hand, total short-term assets have decreased by \$21 billion, with households absorbing \$18 billion. The drop in Federal securities outstanding accounts for nearly all of the decline in short-term assets.

In response to these changes the short-term rate falls in the first six months by a full percentage point, and then begins to gradually return to former levels as aggregate demand and the total amount of borrowing rises. The three- to five-year bond rate also reaches its minimum in the first year, but the subsequent recovery is more gradual. The long-term corporate bond rate continues to decline throughout the first two years and then begins to rise at a very gradual rate. This gradual response results in part from the long lag of the bond rate behind the Treasury bill rate implied by the bond rate equation.

The recovery of interest rates is further delayed by the particular pattern of

debt management implied in the simulation, whereby short-term credit-market assets decline sharply (reflecting a continuing Federal government surplus) and long-term securities increase (reflecting greater business borrowing). In each of the three primary market-rate equations, the decline in household holdings of short-term instruments has more of a depressive effect on rates than the upward pressure exerted by the rise in long-term instruments. Thus the debt-management policies followed in this simulation are an important component of the total expansionary effect. If the decline in government borrowing was more heavily concentrated in long-term securities, market rates would have recovered more rapidly and the rise in investment would have been choked off.⁹

Mortgage Purchases by the Federal National Mortgage Association

The exchange by FNMA of government marketable debt for residential mortgages is representative of an increasingly common type of financial policy. This might be classified as a type of debt management, but it is substantially different from previous emphasis on the maturity distribution of the debt. An exercise in which FNMA mortgage assets are permanently raised by \$1 billion is shown in Table 3 of Appendix A.

An increase in FNMA mortgage holdings is obtained primarily from mortgage companies that originate the mortgages in the primary market. Consequently there is little immediate effect on the mortgage portfolios of the financial intermediaries. The rise in FNMA purchases is nearly fully reflected in a larger total mortgage stock. This in turn is translated into a correspondingly higher level of residential construction in the first year. The multiplier effect of the higher construction expenditures on other demand components is also substantial because of the complementary impact on consumer durable-goods purchases.

About \$.7 billion of the increased borrowing by FNMA is initially reflected in larger household holdings of short-term assets. However, only about \$.2 billion is drawn away from interest-bearing deposit accounts. Although personal savings do not rise, household financial wealth increases by \$.6 billion because part of the increased flow of mortgage funds is used to finance existing homes, so that household mortgage liabilities rise by more than their construction expenditures. In addition, households finance a portion of rising consumption with additional consumer credit. The remaining portion of the FNMA financing is largely accounted for by a rise in business holdings of short-term assets and lower levels of FHLB advances. A rise of about 10 basis points in short-term rates is associated with these shifts in asset holdings. Thus, in spite of some negative feedbacks on alternative sources of mortgage funds, the FNMA operations do serve to stimulate home building in the short run.

However, the relationship between mortgage lending and residential construction is a flow relationship so that no further stimulative effects are realized

beyond the initial increase in the mortgage stock. In fact, aggregate demand will be reduced in future periods as the need to finance the mortgage purchases through higher government-agency lending raises market interest rates. This secondary effect reduces deposit inflows into the mortgage-lending institutions and causes some realignment of their portfolios toward the higher-yield credit-market assets. Business investment is restrained, and the rate of expansion of the mortgage stock, and thus residential construction, declines. After the first 18 months the level of total demand is lower than in the control simulation.

Market interest rates initially rise in response to greater agency borrowing and private credit demands. In subsequent periods market rates decline back toward their former levels, with some evidence of a long cycle. Because of the long lags, it is not clear what the equilibrium values would be, but it appears to be a process of long damped cycles heading toward a zero long-term effect.

Federal Purchases Multiplier

The effects of increasing Federal purchases of goods by \$1 billion in constant 1958 dollars are shown in Table 4 of Appendix A. This provides a representative measure of the implied effectiveness of fiscal policy. Real output is raised by \$1.9 billion at annual rates in the first six months and reaches a peak of \$3.4 billion 18 months after the original stimulus. Thereafter the increment to aggregate demand gradually declines to \$1.2 billion after four and a half years. In the subsequent periods the model appears to follow a pattern of long damped oscillations declining toward zero. The current dollar multipliers, which rise from \$2 billion in the first period to \$4.4 billion after two years, may appear to be rather large, but this is simply because the price deflators (base, 1958 = 1.00) are very large during the period of simulation. For example, the constant dollar government stimulus of \$1 billion is valued at \$2.1 billion in current dollars at the end of the simulation period.

The simulation incorporates an assumption of an exogenous supply of unborrowed reserves. Therefore, the initial increase in demand raises interest rates and leads to offsetting reductions in the demand categories of state and local expenditures, residential construction, and business investment. This response of aggregate demand to higher market rates is delayed and is not of major importance in the first year. Residential construction is reduced in the second and subsequent years both because higher market rates lead to lower deposits in the mortgage-lending institutions and because these institutions realign their own portfolios in the direction of higher-yield marketable securities. The accelerator effects of output dominate business investment in the first 18 months, but thereafter higher borrowing costs push the increment to investment demand back toward zero.

These multipliers seem to be slightly larger than those of other recent econometric models, such as those of FRB-MIT-PENN and the Wharton Forecasting Unit. A substantial portion of these differences can be traced to the investment

equations. Our equations imply a higher marginal capital-output ratio than is typically found in other models. Interest rates do very little to hold down the investment response in the first year because of lags in the adjustment of the bond rate to higher short-term rates and because the primary influence of interest rates on investment occurs in the second and third years. In addition, these equations are not pure accelerator-type formulations where investment is related only to *changes* in the desired capital stock. They include a level-of-output term. Finally, the present version of the model is estimated by ordinary least squares, and the induced responses may be overestimated because of simultaneous-equation bias.

The tendency of the model to display a damped cycle reflects the delayed response of investment to higher market-interest rates. As a result, the initial rise in total output stimulates business investment; however, this accelerator effect becomes weaker in future periods as the negative influence of higher interest rates begins to dominate. But the effect of lower investment on total demand during this second phase causes the current interest rates to decline. Thus there is a third phase, during which investment and total output again increase. This cycle is amplified by the accelerator-type response of inventory investment and consumer durables.

The increase in Federal purchases is only partially offset by higher taxes and lower unemployment transfers, so there is a continuing need for Federal deficit financing. The magnitude of this need is somewhat arbitrary, as it depends on the assumptions with regard to other expenditures and tax policy. We have assumed that tax rates are exogenous so that revenue rises slightly more than proportionally with current-dollar GNP. On the other hand, only purchases of goods and services are adjusted for inflation. Other expenditures are held basically constant in current-dollar terms, with some negative effect from unemployment benefits. As a result of these assumptions, the demands placed on the capital market are less than half of the original expenditure stimulus. We have assumed that this deficit will be largely financed by increased issues of short-term government securities.

The business financing deficit follows the pattern of fixed investment, with substantial borrowing needs occurring during periods of high investment. The fluctuations in corporate profits and inventory investment show strong accelerator effects and largely offset each other. For the first 18 months business borrowing is concentrated in short-term liabilities—principally bank loans. But these demands are shifted into long-term marketable securities in following periods as interest rates level out or decline from their peaks.

State and local demands on the capital market are reduced as construction outlays are reduced and there is a positive, though small, increase in tax revenue.¹⁰ This is reflected in lower long-term bond financing. The deficit of foreigners is reduced by high imports and exogenous constant-dollar exports. This is financed by a combination of more Eurodollar loans to U.S. banks and higher foreign holdings of time deposits and short-term assets.

As a result of these changes in the basic sector deficits, there is initially a substantial increase in total short-term debt financing, with very little increase in long-term credit market instruments. This is amplified by the sale of short-term assets by commercial banks to finance the higher level of bank loans. In future periods these effects are translated into the long-term market as business and the Federal government shift an increasing proportion of their financing to longer-term debt. It is partially offset by the lower level of state and local securities. This shift in composition of credit-market issues is evident in the \$.6 billion rise in short-term securities at the end of one year compared to a net increase of less than \$.1 billion for long-term assets. After six years long-term securities are above previous levels by \$1.6 billion, compared to \$1.8 billion for short-term securities.

Since unborrowed reserves are held constant, commercial banks are unable to expand their total assets significantly. In fact, the decline of time deposits in response to higher market rates results in a redistribution of their liabilities toward demand deposits with a higher reserve requirement. They are forced to sell some short-term securities to finance large holdings of consumer credit and business loans. Nonbank intermediaries do reduce their holdings of residential mortgages, but this potential increase in funds available for credit market assets is partially offset by a lower level of deposit liabilities.

As a result of the above portfolio readjustments, the household sector is required to pick up most of the total increase in short-term assets plus those sold by commercial banks. The total short-term holdings of households and pension funds under these circumstances rise by more than the increase in total outstandings. The nonbank intermediaries make a more substantial contribution to the long-term end of the market, so that the increase in household holdings of long-term credit-market assets is consistently less than 50 percent of the increase in total outstandings.

Within the framework of this model, the increase in household holdings of credit-market assets provides the primary impetus for higher market-interest rates. The three- to five-year bond rate is affected both by the level of household credit market asset holdings relative to total financial wealth and the rate of change of this ratio. Second, there is a pronounced effect of asset composition on interest rates, with a \$1 billion rise in short-term assets having a larger short- and long-run effect on market rates than a \$1 billion increase in long-term assets. Since the changes in credit-market holdings of the first few years are concentrated in the short end of the market, short-term market rates respond quickly to the rise in aggregate demand and reach their cyclical peak after 18 months. Long-term rates move more slowly, with the increase in the first 18 months being only one-half of the rise in short rates. But they continue to rise in future periods, with a long-run increase greater than that for short- and intermediate-term rates. Since the longer-term rates provide the primary link back to the real sector, this delayed response gives an additional explanation for the substantial lag in monetary influence on total demand.

VIII. Conclusion

The present model and many of its implications must be regarded as tentative. At this point we have emphasized that the model produces a solution and that the behavior of the aggregates appear plausible relative to prior expectations. But many of the specific parameter estimates are subject to error and later revision. Flow-of-funds models are still in their infancy, and the quality of the available data for the knowledge of individual sectors' behavior is limited.

However, taken as a whole, the model provides an impressive amount of evidence that financial structure does matter. Particularly, in the short run, financial assets other than money reflect a lack of homogeneity in several dimensions. The multiplicity of significant relative interest-rate effects in the individual equations is demonstrative of the usefulness of the portfolio-balance approach to monetary analysis. Yet the formal theory must be significantly modified to incorporate *flow* as well as *stock* effects. The financial markets seem to be a world where both flows and stocks matter, with both extremes being equally implausible. We hope that this model will provide a general framework within which more advanced work on specific sectors and markets can be evaluated.

Notes

1. The definition of liquid U.S. government securities is somewhat unconventional in that it includes all agency issues and marketable debt under five years. The five-year cutoff was used instead of one year because of a substantial volume of transactions in securities in excess of one year. The intermediate-term securities also are held in substantial volume by sectors such as business, which we would normally expect to have primarily a liquidity interest in financial assets. These factors imply that the one- to five-year securities are viewed as highly liquid investments. There is also a statistical problem of sharply defining the cutoff at one year. With so much movement within individual sectors between one year and over, it was virtually impossible to estimate a stable demand function that could distinguish between a one- and a two-year security. The series actually includes all securities of fewer than four years and a linearly declining proportion of those from four to six years. The procedure was followed in an attempt to eliminate the sudden shifts in the data resulting from the simple aging by which a long-term security on one day suddenly becomes a short-term security on the next.

2. In these works, the mean and standard deviation of a subjectively determined probability distribution are used to measure the yield and risk associated with a financial asset. This simplification provides strong conclusions with regard to the pattern of optimal portfolio selection, in particular that the overall utility of the portfolio will be increased by diversification.

3. A far more detailed discussion of the importance of balance sheet restrictions and other constraints appears in William C. Brainard and James Tobin, "Pitfalls in Financial Model Building," *American Economic Review* 58 (May 1968): 99-122. Of course, these problems are not unique to models of the financial sector, but they are more obvious in areas where compositional factors are so important.

4. Problems of aggregation and measurement error result in situations when the statistical discrepancy is the major balancing item. In computing the least-squares regression,

deviations from the mean are treated equally for all asset classes despite the fact that the data may vary in quality.

5. We did not find a similar response of life insurance companies whose short security holdings remained at rather low levels for most of the period studied. However, since life insurance companies play such an important role in the bond markets, it may be that a change in their expectations forces changes in actual long-term rates rather than quantities. Life insurance rate expectations may therefore be reflected in the equations for the rates themselves.

6. We also did not find a significant statistical influence for previous rates of inflation if they were added to the rate equations as presently formulated.

7. We also have adjusted household savings and the deficit of state and local governments for contributions to employee pension funds. This provides a more symmetric treatment relative to private pension funds. A matching adjustment is not made for the Federal government, since no independent fund is maintained.

8. [Appendix A has not been included—Ed.]

9. The conclusion of this model that debt management can have a substantial impact on the term structure of interest rates is at variance with several previous studies. Our results must be regarded as tentative, but they were obtained consistently from a variety of different formulations of the rate equation. Part of the difference in the results may be traceable to our use of the corporate bond rate as the basic measure of long-term yields. Thus it includes a risk premium as well as liquidity and expectational effects. However, the tax laws have resulted in serious distortions in the government bond rate as a measure of long-term yields in recent years. Of possibly greater significance is our use of private as well as public debt instruments in measuring effects of debt maturity. Private long-term issues (corporate and state and local government) have grown enormously in the postwar period. In contrast, an index of the maturity of the Federal debt (used in prior studies) has consistently declined over the period. Thus the debt maturity measure based on Federal securities alone is inversely correlated with that of the market as a whole.

10. The elasticity of state and local revenue is low with respect to GNP because we have assumed that tax rates are exogenous. In addition, state and local expenditures are affected more by inflation than Federal expenditures in the model because of a much larger role of purchases of goods and services in total expenditures.

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BENJAMIN M. FRIEDMAN

The Demand-Supply Model and Long-Term Interest Rates

(1980)

The yields and prices of long-term assets play an important role in the complex interrelationships that connect financial and nonfinancial behavior in an economy like that of the United States. Long-term interest rates are a major component of the cost of financial capital to corporate borrowers and, consequently, a key determinant of physical capital formation through business investment in new plant and equipment. Long-term interest rates may also affect other typically debt-financed physical investments such as residential construction, although the evidence there is less straightforward. Equity yields constitute another large component of the cost of corporate financial capital, and hence another determinant of business investment. Movements in equity prices (and, to a lesser extent, bond prices) also account for much of the variation in households' overall wealth positions and thereby importantly influence consumer spending. In sum, long-term asset yields and prices are a large part of the story of how what happens in the financial markets—including monetary policy and the financial aspects of fiscal policy—affects the nonfinancial economy.

In light of the importance of long-term asset yields and prices even in a nonfinancial context, the meager treatment accorded their determination in most present-day macroeconomic models is both surprising and disconcerting. Moreover, the skeleton-like treatment accorded long-term assets in such models often contrasts sharply with the rich development of the determination of short-term yields (via a market-clearing approach to the demand for and supply of

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either money or bank reserves) or the effects of long-term asset yields on investment (via the "putty clay" neoclassical investment function) and consumption (via the "life cycle" model). Instead, after carefully modeling short-term interest rates, most such models determine one long-term interest rate by a simple term-structure relation to short-term rates and then determine other long-term yields (including equity yields, and hence equity prices) by analogous single equations, before proceeding to use these long-term asset yields and prices as inputs to the again more fully modeled nonfinancial blocks. Even in models that contain substantial quantity detail relating to long-term asset markets, such detail is often merely peripheral, and the actual determination of long-term yields and prices takes place independently along roughly these lines.

In principle, of course, simplicity is a virtue in economic modeling, and there is nothing *necessarily* wrong with handling this key middle step between short-term yields and nonfinancial behavior by a spare single-equation approach. The issue, instead, is whether the standard single term-structure equation does or does not adequately represent the main features of long-term interest rate determination. In particular, while such equations could in principle capture effects due to shifts in relative asset demands (say, because of weak cash flows at major bond-buying institutions) or relative asset supplies (say, because of strong business capital expenditures in comparison to profits), in practice they do not. Experience with U.S. data indicates that single term-structure equations are simply incapable of representing such influences on long-term interest rate determination.¹ To the extent that such influences matter, therefore, these single equations inadequately represent long-term yield behavior, and macromodels based on these equations may give a misleading picture of important financial effects on nonfinancial economic behavior.

The object of this paper is to bring to bear on financial-nonfinancial interactions a richer approach to modeling the determination of long-term interest rates. In a series of previous papers² I have developed an alternative model based explicitly on the truism that any factor affecting long-term bond yields does so by (and only by) influencing some borrower's supply of bonds and/or some lender's demand for bonds. Rather than model the bond yield directly, as in the single-equation term-structure approach, this work instead models the supply of and the demand for bonds, and determines the bond yield at the level necessary to equate resulting total supply and demand.³ The specific bond supplies and demands modeled in this work are those in the U.S. market for corporate bonds; this market is the primary source of long-term external funds to finance business fixed investment, and the corporate bond yield is also the long-term interest rate most frequently used in single-equation models of term-structure relationships.⁴

This paper reports the implications of this supply-demand model of long-term interest rate determination for the effectiveness of monetary and fiscal policies, as modeled in all *other* respects by the MIT-Penn-SSRC (henceforth MPS) econometric model of the United States. The new research tool applied in this

paper is therefore an *altered* MPS model from which the usual single term-structure equation has been removed and into which a supply-demand model of the bond market has been substituted. The only difference between this altered MPS model and the familiar MPS model therefore lies in the determination of long-term asset yields and prices. Since these long-term yields and prices are such an important part of the overall bearing of financial market developments on nonfinancial behavior, however, the altered model exhibits interesting implications for fiscal and monetary policies.

Section 1 describes the supply-demand model of the bond market, contrasting it to the standard single-equation term-structure approach, and notes some of the key influences on long-term interest rate determination that the MPS model's term-structure equation overlooks but that the supply-demand model of the bond market incorporates. Section 2 briefly recalls the important channels by which long-term asset yields and prices (however determined) affect nonfinancial behavior in the MPS model. Sections 3 and 4 focus on fiscal policy and monetary policy, respectively, highlighting the differences that emerge in the analysis of these policies according to the approach adopted for long-term interest rate determination. Section 5 offers some general conclusions drawn from these results, and suggests some opportunities for further research along these lines.

1. The Determination of Long-Term Interest Rates⁵

A. The Concept of the Demand-Supply Model

Since the concept of price determination by the market-clearing intersection of demand and supply is central to the analysis of economic behavior, it seems at first only natural to approach the determination of financial asset prices and yields from an explicit demand-supply perspective. The total market demand for any given asset A^D is presumably some function of the asset's yield r and of other factors (such as yields on competing assets, variances and covariances, etc.),

$$A^D = f^D(\dots, r, \dots) f^D \geq 0 \quad (28.1)$$

while the total market supply of the asset is an analogous function⁶

$$A^S = f^S(\dots, r, \dots) f^S \leq 0. \quad (28.2)$$

The requirement of market clearing,

$$A^D = A^S, \quad (28.3)$$

closes the system and permits the model to determine not only the asset quantity A ($= A^D = A^S$) but also the asset yield r . Any factor that influences the demand

for or supply of an asset will also, *ceteris paribus*, influence the asset's yield (and price). Conversely, any factor that influences an asset's yield does so, *ceteris paribus*, only by influencing the relevant market demand or supply (or both).

In addition to its appeal from the general standpoint of economic theory, there are two further reasons why the explicit demand-supply perspective seems particularly appropriate for modeling asset prices and yields. First, the highly efficient markets for many actively traded financial assets should be cases for which, in comparison with many product and factor markets, the assumption of market clearing as in equation 28.3 requires relatively little sacrifice of realism. Second, a long tradition of economic analysis of portfolio behavior has provided a rich development of economic theory deriving the pertinent asset demand and supply relations, as in equations 28.1 and 28.2, from the constrained utility-maximizing behavior of market participants under a variety of assumptions about the specification of the utility function and the nature of the associated constraints.

At the empirical level, however, economists modeling the determination of long-term interest rates—that is, the yields on fixed-income assets of long duration—have traditionally avoided the explicit demand-supply apparatus and instead related long-term interest rates *directly* to short-term interest rates and/or various other factors assumed to influence the demand for and/or the supply of long-term bonds. The dominant empirical methodology associated with this approach has been a model consisting of a single *unrestricted* reduced-form equation with the value of the (nominal) long-term interest rate as the dependent variable. Familiar explanatory variables used in such unrestricted reduced-form long-term interest rate equations include proxy representations of expected future short-term interest rates and expected future price inflation, a monetary policy variable, a proxy for liquidity considerations, etc. Indeed, the literature of the subject has typically—and properly—considered any variable that might influence the demand for and/or supply of bonds an appropriate argument of the unrestricted reduced-form equation determining the long-term interest rate.

Since the explicit demand-supply model of equations 28.1 through 28.3 also implies an equation for the long-term interest rate, this structural model constitutes a valid alternative to the single-equation unrestricted reduced-form model. The demand-supply model's implied expression for r is itself a reduced-form equation (except for any nonlinearities introduced by functional forms f^D and f^S) that is equivalent to the conventional equation except that it is *restricted* by the underlying structural demand and supply equations.

The two key advantages of the demand-supply model are its ability to use the theory of portfolio behavior to restrict the implied equation for the long-term interest rate and the facility that it provides for directly investigating hypotheses about portfolio behavior. In return, this structural approach imposes on the researcher the discipline of explicitly acknowledging that, since financial asset yields (i.e., asset prices) are proximately determined in a market in which assets are bought and sold, any factor hypothesized to influence the long-term interest

rate can do so only by influencing some issuer's supply of bonds or some investor's demand for bonds, or both. To the extent that expectations of future short-term yields are relevant via substitution effects that enforce the familiar term-structure relationship, or that less-than-infinite elasticities of substitution create "preferred habitats" that render quantity variables relevant, or that less-than-infinite adjustment speeds render quantity flow variables relevant as well as quantity stock variables—all these factors affect the determination of long-term interest rates by, and only by, influencing the portfolio behavior of borrowers and lenders.

B. Methodological Issues

Several methodological aspects of the demand-supply approach to modeling long-term interest rate determination merit explicit comment.

First, since the long-term interest rate is clearly a jointly determined variable in the structural model, it is necessary to use an estimation technique that avoids the inconsistency to which the model's simultaneity would subject ordinary least-squares procedures. Numerous instrumental-variable procedures are readily available for this purpose.

Second, the demand-supply approach largely avoids the problem of spurious correlations inherent in unrestricted estimation of interest rate relationships. This point is especially relevant in the case of flexible distributed lags on past interest rates, which are typically the heart of interest rate models based on the expectations theory of the term structure. In a structural model any such distributed lags simply appear as arguments of the individual demand and supply equations, where spurious correlation is both less likely and less harmful.

Third, it follows by construction of least-squares estimators that the single-equation unrestricted reduced-form model of long-term interest rate determination will always "fit" historical interest rate data at least as well as the restricted expression estimated implicitly within any corresponding explicit demand-supply model. Hence it is *possible* that the structural model may buy its key associated advantages—its ability to use and test explicit behavioral hypotheses—at great cost in terms of performance as measured by within-sample fit. The key methodological finding documented in Friedman (1977b, 1979), however, is that a fully dynamic simulation of the structural bond market model tracks the historical long-term interest rate with a root-mean-square error no larger (and sometimes smaller) than the comparable standard errors reported by researchers using the unrestricted single-equation term-structure methodology. Hence the portfolio-theoretic restrictions placed on the structural model's demand and supply equations apparently "pay their freight" in terms of enriching the model's ability to draw general behavioral implications without substantially eroding even its within-sample "predictive" performance.

C. The Equations in the Bond Market Model

The demand side of the corporate bond market model consists of six equations separately representing the net purchases of corporate bonds by life insurance companies, other insurance companies, private pension funds, state and local government retirement funds, mutual savings banks, and households; these investors together hold approximately 95 percent of all corporate bonds issued in the United States. The supply side of the model consists of two equations separately representing the net new issues of corporate bonds by domestic nonfinancial business corporations and finance companies, which together account for more than 90 percent of all corporate bonds issued in the United States. A ninth equation determines the net of the bond-purchasing and bond-issuing activity of the remaining categories of market participants.

The model's tenth and final equation is a market-clearing equilibrium condition analogous to equation 28.3 that enables the structural model to determine the nominal long-term interest rate (i.e., the own-rate), which is an argument of each structural bond-demand or bond-supply equation. The particular long-term interest rate used as the own-rate in this model is the observed new-issue yield on long-term bonds issued by utility companies rated Aa by Moody's Investors Service.

The specification of the respective sectors' bond demand equations combines the familiar linear homogeneous model of desired portfolio selection,

$$\alpha_{it}^* \equiv \frac{A_{it}^*}{W_t} = \sum_k^N \beta_{ik} r_{kt}^e + \sum_h^M \gamma_{ih} x_{ht} + \pi_i \quad i=1, \dots, N,$$

with the optimal marginal adjustment model of portfolio adjustment in the presence of transactions costs,

$$\Delta A_{it} = \sum_k^N \theta_{ik} (a_{kt}^* W_{t-1} - A_{k,t-1}) + a_{it}^* \Delta W_t \quad i=1, \dots, N,$$

where the α_i are percentage portfolio shares, the A_i are dollar amount asset holdings, W is total portfolio size, the r_k^e are expected yields, the x_h are other influences on portfolio selection (including variances and covariances), the ΔA_i are net asset purchases, ΔW is total investable cash flow, an asterisk indicates a desired value, and the β_{ik} , γ_{ih} , π_i , and θ_{ik} are fixed behavioral parameters. The specification of the respective sectors' bond supply equations is analogous to that of the model's bond demand equations, combining the linear homogeneous selection of desired liabilities to finance a given cumulated external deficit and again the optimal marginal adjustment model.

The primary rationale motivating the use of the linear homogeneous portfolio selection model is, as usual, simply its convenience and tractability.⁷ Some adjustment model is always necessary to render a desired portfolio allocation model operational in the presence of transaction costs. The principal advantage motivating the use of the optimal marginal adjustment model is that it captures, in a tractable way, the effect of differential transaction costs, which renders the allocation of the new investable cash flow more sensitive to expected yields (and variances, etc.) than the reallocation of the asset holdings already in the portfolio.

The primary data source for the stock and flow quantities used in this model is the Federal Reserve System's flow-of-funds accounts. The respective bond demand and supply equations are estimated using the instrumental-variables procedure of Brundy and Jorgenson (1971).

D. Influences on the Long-Term Interest Rate

Since a key determinant of market participants' demands for and supplies of bonds as modeled in equation 28.4 is the comparison of the expected yield on bonds versus the yield on short-term assets, short-term yields play a large role in determining long-term yields in the demand-supply model just as they do in a single-equation term-structure model. Expectations of price inflation, proxied by current and recent observed inflation, also play an analogous role here and in the conventional term-structure equation. If these variables were the *only* arguments of the demand and supply equations, then the sole contribution of the structural model would be the imposition of some restrictions on the estimation of an otherwise standard long-term interest rate equation.

In fact, however, the respective bond demand and supply equations as modeled in equations 28.4 and 28.5 include a rich set of arguments other than just short-term yields and price inflation, and the structural model's basic requirement that total demand equal total supply likewise determines the long-term interest rate in a way that depends on these additional market forces. Allowing for these additional factors changes the process determining long-term interest rates (and long-term asset yields and prices more generally) and consequently alters the way in which the financial markets affect nonfinancial economic behavior in the overall macroeconometric model.

Substituting the corporate bond market model for the MPS model's term-structure equation therefore brings to bear on long-term interest rate determination a host of aspects of financial market behavior that are already modeled elsewhere in the MPS model but that are ordinarily excluded by the MPS model's term-structure equation from affecting long-term yields. The interactions among these forces are sufficiently complex to preclude a full enumeration. Nevertheless, since the results presented below show that the overall implications of these factors for the financial-nonfinancial behavioral linkage are substantial, it is useful to highlight separately several of the more important ones.

Business Borrowing Effects

The MPS model determines the business sector's after-tax profits and depreciation allowances, as well as key uses of funds such as capital expenditures, inventory accumulation, and dividend payments. Hence the model also approximately determines the business sector's external borrowing requirements. In the bond market model, the external deficit of the business sector is a key determinant of the supply of bonds.⁸ Stronger fixed investment or weaker profits (or both together) imply a larger external deficit, hence greater bond supply, hence a higher market-clearing long-term interest rate *ceteris paribus*.

Investable Cash Flow Effects

The MPS model determines the incomes and expenditures, and hence the net accumulations of financial assets, for most of the major categories of bond market investors.⁹ In the bond market model, each investing sector's investable cash flow is a key determinant of its demand for bonds. Stronger personal income flows, or additional payments into pension funds, or stronger demand for life insurance products (or all three together) implies a larger investable cash flow, hence greater bond demand, hence a lower market-clearing long-term interest rate *ceteris paribus*.

Disintermediation Effects

The MPS model devotes particularly detailed attention to the determination of the cash flows of institutions that, at times of high short-term market yields, experience cash outflows because of deposit interest rate ceilings or an equivalent. The two such institutions also included explicitly in the bond market model are life insurance companies, which must meet policy loan demand at predetermined rates, and mutual savings banks, which face the familiar Regulation Q ceilings. In either case, higher short-term market yields imply a smaller investable cash flow, hence smaller bond demand, hence a higher market-clearing long-term interest rate *ceteris paribus*.

Portfolio Diversification Effects

The MPS model determines the movement of equity prices, and hence the value of the equity portion of investors' portfolios. In the bond market model, each investing sector seeks to diversify its total portfolio in the context of changing asset values, of which the most volatile by far are equity prices.¹⁰ Higher equity prices imply a greater value of equities in investors' portfolios, hence greater bond demand, hence a lower market-clearing long-term interest rate *ceteris paribus*.

Perceived Risk Effects

The MPS model determines the yields on short-term financial assets such as commercial paper and Treasury bills, as well as (here in conjunction with the bond market model) the yields and prices of long-term assets such as bonds and equities. In the bond market model, each investing sector selects its portfolio on the basis of not only the expected yields on the available assets but also the variances associated with those yields. Greater variability of equity prices implies greater bond demand, hence a lower market-clearing long-term interest rate, while greater variability of bond prices implies smaller bond demand, hence a higher market-clearing long-term interest rate *ceteris paribus*.¹¹

2. Influences of the Long-Term Interest Rate on Nonfinancial Behavior in the MPS Model

In the MPS model the long-term interest rate, once determined, exerts in turn a variety of influences on nonfinancial economic behavior.¹²

Perhaps the most familiar of these influences, following Jorgenson (1963) and Bischoff (1970), is the effect on business fixed investment via the role of the long-term interest rate in determining the user cost of capital. The cost of capital in the model is a weighted average (appropriately adjusted for tax factors) of the corporate bond yield and the dividend-price equity yield, where the equity yield depends on the bond yield via a simple term-structure-like relation. The user cost of capital is in turn a principal determinant of the unit rental rate on physical capital, which depends also on depreciation factors, additional tax factors, and the price of capital goods. The rental rate together with the price of business output then determine the equilibrium capital-output ratio, the desired capital stock is a function of current and lagged values of both output and the equilibrium capital-output ratio, and investment expenditures finally follow from an adjustment process that gradually brings the actual capital stock into alignment with the corresponding desired level.

The MPS model applies this causal chain, with the corporate bond yield at its inception, to determine separately expenditures on producers' structures and on producers' durable goods. In addition, the MPS model applies an analogous causal chain beginning from the mortgage yield (which, like the equity yield, depends on the corporate bond yield via a simple relationship) to determine separately expenditures on one- to two-family houses and on multi-family houses. The motivation underlying the MPS model's determination of expenditures of consumer durables is again analogous, although in this case the model actually uses a simplified function relating consumer durable expenditures directly to the corporate bond yield.

In addition to these direct influences, in the MPS model the corporate bond yield also exerts one further important influence on nonfinancial behavior at only

one step removed. The MPS model solves for the market value of outstanding corporate equities as the quotient of dividend payments (determined by a function in which the corporate bond yield is one direct argument among several) and the dividend-price yield (determined by a function in which the corporate bond yield is the principal direct argument). Equities in turn account for a large part of the average value of households' total wealth and, given the relative volatility of equity prices, an even larger part of the variation over time in households' total wealth. Since households' wealth is the primary determinant of nondurable consumption in the "life cycle" model developed by Ando and Modigliani (1963), Modigliani (1966), and Modigliani and Brumberg (1954), the value of corporate equity—and hence its key determinant, the corporate bond yield—emerges as the major driving force behind consumption spending.

In light of its direct influence on business fixed investment, residential construction, and durable consumption, and its only marginally less direct influence on nondurable consumption, the corporate bond yield emerges as one of the most important variables in the MPS model's relation of nonfinancial behavior to the financial markets. Moreover, within the model's representation of the financial markets themselves, the corporate bond yield is a direct argument of the functions determining numerous yield variables (including the yields on equities, mortgages, municipal bonds, commercial loans, mutual savings bank deposits, and savings and loan shares) as well as quantity variables (e.g., corporate dividends, commercial loan demand, new mortgage commitments, and thrift institution deposits); and these financial variables also exert diverse influences on nonfinancial economic behavior in the model.¹³

Changing the MPS model's method of determining the corporate bond yield, by substituting the demand-supply model of the bond market outlined in section 1 in place of the MPS model's single term-structure equation, can therefore have substantial implications for the model's overall behavior. If the bond market model successfully captures central features of long-term interest rate determination omitted by the term-structure equation, then the description provided by the combined MPS and bond market model will provide a better guide to the working of the economy.

3. Analysis of Fiscal Policy Effects

A. Fiscal Policy with Nonaccommodative Monetary Policy

The magnitude and timing of the economic effects of fiscal policy actions constitute two of the most widely investigated phenomena in the literature of empirical macroeconomics. A "pure" fiscal action in this context has come to mean deficit spending (or tax reduction, or the reverse of either one), with the money stock held unchanged so that, in effect, the government finances its deficit not by money creation but by selling interest-paying debt instruments to the public.¹⁴ A

now familiar feature of such "bond-financed" fiscal actions is that the stimulative effect on total economic activity is only temporary, with the additional government spending "crowding out" some or all forms of private spending after some time.

Table 28.1 summarizes the results of two simulations of the MPS model designed to investigate the economic effect of a sizable increase in the federal government's purchases of goods and services. The first simulation uses the *conventional* MPS model in which the key linkage determining the long-term corporate bond yield (the Aaa seasoned bond index) is the standard single term-structure equation. The second simulation uses instead the *altered* MPS model, in which the conventional model (less the term-structure equation) is combined with the demand-supply model of the corporate bond market. Since the corporate bond market model determines the Aa new-issue utility yield, an additional equation then determines the Aaa seasoned corporate yield via a simple direct relationship, and the Aaa seasoned yield remains the yield variable used on the right-hand side of the many other MPS equations noted in section 2.¹⁵

In all respects other than the substitution of the demand-supply corporate bond market model for the single term-structure equation as the means of determining long-term interest rates, the two simulations are identical. The period of attention in both is the ten-quarter interval spanning 1967.I–1969.II—perhaps the last time that the U.S. economy was neither in recession, nor in the immediate recovery from a recession, nor under price controls, nor adjusting to sharp energy price changes.¹⁶ In both simulations the model is adjusted by adding back the historical single-equation residuals so that, given the historical values for all of its exogenous variables, the model would exactly reproduce the historical paths for its endogenous variables. Hence whatever differences emerge between the simulated and historical values of the endogenous variables, when any exogenous variable differs from its historical path, are attributable entirely to the effect of that exogenous variable in the model rather than to any underlying failure of the model's ability to reproduce the observed historical record.

The three left-hand columns of Table 28.1 report sets of mean values for several key economic variables over the ten quarters of the simulation period: first the historical means, next the means from the fiscal policy simulation based on the MPS model alone, and then the means from the analogous simulation based on the combined MPS and corporate bond market model.

The behavior of two key exogenous variables defines the economic policy content of the simulations. In both simulations fiscal policy is more expansionary than it was historically, to the extent of an additional \$10 billion (in 1972 dollars) annual rate of federal government spending on goods and services—that is, an additional \$25 billion spent over the ten quarters. Monetary policy is non-accommodative in both simulations, in that the money stock is unchanged from its historical path despite the additional government spending.

A comparison of the first and second columns of the table shows the familiar

Table 28.1

Comparison of Simulated Fiscal Policy Effects (nonaccommodative monetary policy)

Variable	1967.I-1969.II Mean Values			Values in 1968.I		
	Historical	MPS Model Alone	Combined Model	Historical	MPS Model Alone	Combined Model
<i>G</i> : real federal government purchases (1972 \$ billions)						
<i>M</i> : demand deposits plus currency (\$ billions)	95.0 193.2	105.0 193.2	105.0 193.2	96.2 190.4	106.2 190.4	106.2 190.4
<i>r_{TS}</i> : Treasury bill yield (percent)	5.09	6.64	7.02	5.05	6.78	7.11
<i>r_{CP}</i> : commercial paper yield (percent)	5.82	7.56	7.99	5.58	7.49	7.84
<i>r_{Aaa}</i> : Seasoned Aaa corporate bond yield (percent)	6.03	6.53	6.15	6.13	6.60	6.24
<i>S</i> : market value of common stock (\$ billions)	729.6	672.1	677.4	695.1	680.2	692.4
<i>X</i> : real gross national product (1972 \$ billions)						
<i>IP</i> : real investment in plant (1972 \$ billions)	1039.3	1048.0	1052.0	1031.4	1047.9	1052.6
<i>IE</i> : real investment in equipment (1972 \$ billions)	41.9	42.5	42.7	42.2	43.4	43.7
<i>P</i> : implicit price deflator (index, 1972 = 100)	65.5	66.7	67.1	64.7	67.0	67.5
<i>GNP</i> : gross national product (\$ billions)	81.73 850.1	82.87 869.1	83.00 874.0	81.18 837.3	82.22 861.6	82.33 866.6
<i>DN</i> : nonfinancial corporations' net external deficit (\$billions)	31.8	—	32.0	28.6	—	30.6
<i>WH</i> : households' net accumulation of financial assets (\$ billions)	66.6	—	70.8	68.1	—	73.6
<i>B</i> : total net new issues and purchases of corporate bonds (\$billions)	14.0	—	16.2	11.3	—	11.8
<i>r_{Aa}</i> : new-issue Aa utility bond yield (percent)	6.56	—	6.69	6.54	—	6.58

story of how debt-financed fiscal policy works in the MPS model. No additional supply of money is available to accommodate the greater demand for money due to the induced increase in economic activity, and so short-term interest rates must rise by about 1.5 percent to clear the money and bank reserves markets. The model's term-structure equation translates this increase in short-term interest rates into an increase of 0.5 percent in the corporate bond yield, and related equations generate a decline of \$58 billion (nearly 8 percent) in equity values. Because of the effect of higher short- and long-term interest rates and lower equity values operating through the channels enumerated in section 2, the average effect on real income associated with the additional \$10 billion of government spending is only \$8.7 billion. (In other words, the ten-quarter average multiplier is 0.87.) It is interesting to note, however, that the overall average effect of the fiscal policy action on business capital formation is slightly positive, with fixed investment marginally greater for both plant and equipment, indicating that in the model the positive effects of a higher operating rate outweigh the negative effects of a higher cost of capital. Hence the burden of "crowding out" represented by the less-than-unit multiplier value falls entirely on consumption and residential construction. Finally, prices are higher by about 1 percent, because of the greater real economic activity, so that the average nominal income for the ten quarters is greater by \$19 billion.

The third column of Table 28.1, which gives the corresponding ten-quarter mean values for the analogous simulation using the combined MPS and corporate bond market model, gives a somewhat different—in particular, a more expansionary—account of the working of fiscal policy. Average real income is greater than the historical not by \$8.7 billion but by \$12.7 billion (a ten-quarter multiplier of 1.27), and both components of business capital formation are slightly stronger than in the simulation based on the MPS model alone. With prices marginally higher also, the average nominal income is greater than the historical by \$24 billion. As is to be expected, this stronger nominal income growth increases the demand for money yet further, in comparison with the first simulation, so that the increase in short-term interest rates is about 2 percent. Despite this sharp increase in short-term interest rates, however, the corporate bond yield rises very slightly, and the related decline in equity values is only \$52 billion.

Since the smaller increase in the corporate bond yield (together with the associated smaller equity market decline) is the key factor underlying the more expansionary effect of fiscal policy in this alternative model simulation, it is useful to examine some of the variables specific to the bond market model to understand how it comes about. The bottom lines of Table 28.1 show historical and simulated ten-quarter mean values for four variables that are central to the demand-supply model's treatment of the bond market.¹⁷ On the supply side of the market, it turns out that the average net external deficit of the nonfinancial corporate business sector is marginally greater than the historical as a result of

the fiscal action, as increased capital expenditures somewhat more than offset increased after-tax profits (adjusted for inventory valuation). On the demand side of the market, a number of categories of bond buyers experience a larger-than-historical investable cash flow; the table reports the average values for the household sector cash flow, which increases by more than \$4 billion.

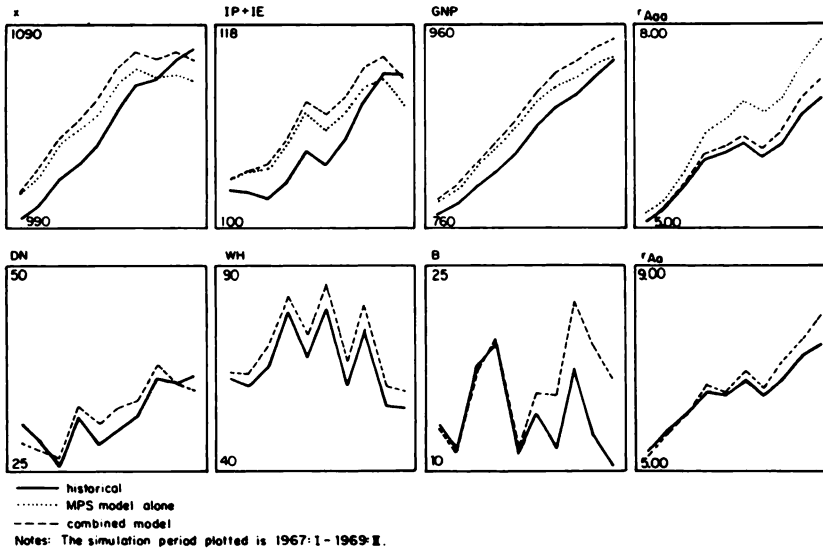
With the sharp rise in short-term interest rates, businesses have an incentive to finance more of their external funds requirements in the bond market. Hence average total bond issues rise by \$2.2 billion (or 16 percent) in comparison to the historical. At the same time, even this increase in bond issues is small in comparison with the increase in aggregate investable cash flow. As a result, the substantial shift in corporate financing toward bond issues causes only a slight increase in the corporate bond yield.

Figure 28.1 provides further information about these two simulations by plotting the quarter-by-quarter historical and simulated paths, for the ten quarters of the simulation period, for several key variables. The dotted paths, corresponding to the simulation of the unaltered MPS model, clearly show the model's "complete crowding out" result. The increase in government spending at first boosts private spending also, but this effect lasts little more than a year. By the tenth quarter of the fiscal stimulus, real income is far *below* the corresponding historical value, indicating that the \$10 billion of additional government spending has crowded out more than \$10 billion of private spending. After ten quarters, business capital formation is also below its historical path. Nominal income, of course, remains above the historical path throughout, because of the induced higher price level.¹⁸ The stock market has approximately stabilized, in comparison with the historical path, after the first year.

The broken lines in the figure show the contrasting analysis of fiscal policy indicated by the simulation of the combined MPS and corporate bond market model. Here the peak in the expansionary effect of government spending on real income again comes in the fifth quarter. In contrast to the simulation of the MPS model alone, however, here the real crowding out is complete—but not much more than that—by the end of the simulation period. Again in contrast to the simulation of the MPS model alone, business capital formation remains above the historical path until the tenth quarter. Among the variables specific to the bond market model, the business deficit first declines and then recovers while the household cash flow first rises and then falls back in comparison with the historical. As a result, both net bond volume and the corporate bond yield are first slightly below, then slightly above, and finally sharply above the corresponding historical paths.

Since the peak effect of expansionary fiscal policy on real income comes in the fifth quarter of the simulation period, the three right-hand columns of Table 28.1 show the precise comparative values for that one quarter. These results bear little explicit comment. In the simulation of the combined MPS and corporate bond market model, the business deficit, the household cash flow, and the net

Figure 28.1 Comparison of Simulated Fiscal Policy Effects
(nonaccommodative monetary policy)



See Table 28.1 for definitions of variable symbols.

bond volume are all greater than the corresponding historical values, but the bond yield is only marginally higher and equity prices are only marginally lower. As a result, the peak effect on business capital formation is not trivial (\$4.3 billion, or 4 percent) and the peak effect of real income is \$21 billion (or a peak multiplier of 2.12). By contrast, in the simulation of the MPS model alone the peak effect on investment is only \$3.5 billion, and the peak effect on real income is \$16 billion (or a peak multiplier of 1.65).

[Note: Three other sets of simulations, including two on monetary policy, in sections 3B and 4, have been omitted—Ed.]

5. Conclusions and Further Prospects

What should one make of these simulation results?

First—and most significantly—these comparative simulations confirm the importance of long-term asset yields (and prices) in financial-nonfinancial interrelationships, and they illustrate the corollary sensitivity of even the most central features of a macroeconomic model to the model's representation of long-term interest rate determination. The substitution of a demand-supply model for the conventional single term-structure equation does more than merely provide auxiliary detail about the size of perhaps disaggregated securities issues and pur-

chases. It also changes a key link in the mechanism connecting financial market phenomena to nonfinancial economic activity. As a result, the overall model gives different answers to familiar policy questions.

At a more specific level, the simulation results presented in sections 3 and 4 suggest that in the short to intermediate run, fiscal policy may have somewhat larger real-sector effects and monetary policy somewhat smaller real-sector effects than conventional macroeconometric models such as the MPS have indicated. Moreover, the results also suggest that these differences (for both fiscal and monetary policy) are more pronounced when the Federal Reserve System implements monetary policy by setting the monetary growth rate than when it does so by setting interest rate levels. Nevertheless, the preliminary, and in some ways very rudimentary, nature of the combined MPS and corporate bond market model used in these simulations warrants regarding such specific conclusions at best with great caution.

Finally, among the many ways of further improving and refining this combined model's representation of long-term interest rate determination, the one that stands out most clearly as of potential benefit in the analysis of macroeconomic policy effects is the addition of an explicit demand-supply treatment of the government bond market to parallel that of the corporate bond market. As Ando (1974) has explained, the MPS model does not explicitly incorporate the relative asset stock effects necessary to represent the "portfolio crowding out" mechanism emphasized by Christ (1968) and Silber (1970a). In the model as it stands, even with the addition of the corporate bond market model, the displacement of private spending by government spending as discussed in section 3 primarily reflects the "transactions crowding out" that results from the positive effect of income on the demand for money. Nowhere does the model's determination of interest rates explicitly allow for the need to have private sector investors purchase the increased net flow of government securities associated with a stimulative fiscal policy action. The demand-supply model of the U.S. government securities market developed by Roley (1977) is an empirical counterpart to the model of the corporate bond market developed in Friedman (1977b, 1979), and in current work I am incorporating that model into the combined MPS and corporate bond market model with the specific object of explicitly incorporating such "portfolio crowding out" effects. The implications of that extended model for the effects of monetary and fiscal policies (as well as debt management policy) remain the subject of future research.

Notes

1. To date the most comprehensive attempt to represent such effects within the single-equation term-structure approach has been that of Modigliani and Sutch (1967).
2. See Friedman (1977b, 1978, 1979, 1980) and Friedman and Roley (1977, 1979a).
3. The basic thrust of this approach is the same as in the work of Silber (1969, 1970b)

and Hendershott (1977) and Hendershott and Orlando (1976), and it is similar in spirit to that of Bosworth and Duesenberry (1973). See the references cited in note 2 for contrasts to these authors' work.

4. Other researchers have also successfully applied this approach to the U.S. government securities market (Roley 1977; 1978; 1980), the municipal bond market (Dick 1978), and the equity market (Jones 1979). The discussion in section 5 below indicates potential opportunities for incorporating these other models in work analogous to that reported in this paper.

5. This section, intended as a summary, draws heavily on the materials cited in note 2. See those references for further detailed descriptions and results.

6. In some contexts, such as the government bond market, asset supply is determined by a process that does not directly reflect private market participants' behavior.

7. Friedman and Roley (1979b) showed that linear homogeneous asset demand equations, as in equation 28.4, follow from the assumptions of constant relative risk aversion and joint normally distributed assessments of asset returns.

8. In some versions of the bond market model, variables such as fixed investment and retained earnings affect bond supply even apart from their effect via the external deficit (Friedman 1978; 1979). The version used in conjunction with the MPS model excludes these features. In addition, an important business use of funds that the MPS model does not determine is the net accumulation of liquid assets; it is therefore necessary to add a liquid asset equation to the model.

9. For the household sector it is necessary to add an equation for nonmortgage borrowing (mostly consumer credit) in order to determine the net financial asset accumulation.

10. Portfolio diversification behavior is a key element in the "relative asset stock effects" that, as Ando (1974) has pointed out, are missing from the familiar MPS model. The discussion in section 5 below suggests ways to incorporate additional aspects of relative stock effects in a further expanded model.

11. The variability of price inflation also affects investors' demands in the bond market model. The MPS model's original term-structure equation also includes some attempt to capture variability effects via a single term with the standard deviation of the commercial paper yield.

12. For descriptions of the MPS model (and its antecedents) see Ando (1974); Cooper (1974); de Leeuw and Gramlich (1968; 1969); Gramlich and Jaffee (1972); Modigliani (1971); and Modigliani and Ando (1976). The version of the model used for this paper is the 1978 version as supplied by the staff of the Federal Reserve Board.

13. The most important aspects of financial quantity variables' effects on nonfinancial behavior in the MPS model concern credit availability effects in the mortgage market; see de Leeuw and Gramlich (1969) and the papers by Gramlich and Hulett, Modigliani, and Jaffee in Gramlich and Jaffee (1972).

14. In reality, the Treasury always finances its deficit by issuing interest-paying debt instruments, and the only question is whether the Federal Reserve System "monetizes" that debt by purchasing some of it and thereby providing the banking system with enough reserves to absorb the remainder. The discussion in section 5 below suggests ways of making this process more explicit by further extensions of the MPS model.

15. Simply eliminating the Aaa seasoned yield from the model and using the Aa new-issue utility yield in its place would have required re-estimating each such equation.

16. Because of the many nonlinearities in both the MPS model and the corporate bond market model, the specific results found for any given simulation experiment will depend in general on the initial conditions chosen. Additional experiments, analogous to those reported in this paper but for different time periods, suggest that the results shown here for the 1967.I–1969.II interval are roughly representative of the behavior of the model for other time periods as well.

17. The table does not report corresponding mean values for the simulation of the MPS model alone, because the unaltered MPS model does not determine these variables.

18. Ando and Modigliani (1976) emphasized this feature of the model and contrasted it with the puzzling implication of some reduced-form models—for example, Cooper (1974) and Anderson and Jordan (1968)—that fiscal policy results in complete *nominal* crowding out. More recent work—for example, Federal Reserve Board (1979) and Friedman (1977a)—has shown that reduced-form models estimated using current data no longer exhibit this property, although Carlson (1978) has shown that it is still possible to construct and estimate such a model (if, for some reason, one wants to do so).

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Toward General Equilibrium Analysis with Careful Social Accounting

(1980)

1. Introduction

At the beginning of this or any calendar quarter, economic agents in the United States—households, business firms, financial institutions, governments—held certain measurable quantities of a variety of assets, financial and real. The great bulk of financial assets were the debts of other resident agents; some were debts of foreigners. The bulk of real assets were land and reproducible consumers' or producers' durable goods located within the country. We also owned real properties abroad, just as foreigners owned some here. These asset and debt positions were the cumulative results of past saving and investment, past portfolio behavior, and past capital gains and losses, realized or unrealized.

During the current quarter, these balance sheets will change. Households will be deciding how much to add to their wealth and in what form. Businesses will be deciding how much real capital to accumulate and how to finance their investments. Governments will be running and financing budget surpluses or deficits; in this particular quarter no doubt they will be on balance in deficit and will have to issue new interest-bearing debts or new monetary liabilities. Probably they will issue some of each. The country's net position vis-à-vis the rest of the world will decline by the deficit in the external current account. This deficit, too, will have its financial counterparts. At the same time, all these agents, and

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foreigners as well, will be reshuffling their initial balance sheets. The transactions and revaluations resulting from portfolio shifts are indistinguishable from those connected with saving and accumulation. At the end of the quarter, there will be new balance sheets, to be adjusted again in the next quarter.

During each quarter the new asset stocks desired by some agents are somehow reconciled to new supplies offered by others. The process is closely linked to economic activity—production, consumption, employment, inflation—during the quarter. The links go in both directions. Current incomes help to determine household saving, business saving and investment, government deficits, and the current account deficit. Simultaneously, commodity prices, foreign exchange rates, interest rates, and asset revaluations influence consumer spending, domestic capital accumulation, and net foreign investment. Thus the mechanisms that maintain balance of asset demands and supplies are intertwined with those that balance flows of commodities and labor.

Several kinds of government policies affect the real and financial outcomes. Budget policies determine government purchases of goods and services, transfer payments, and taxes. In addition to their direct effects on commodity markets, these policies help to determine the government deficit and the new supplies of government liabilities. Financial and monetary policies determine how the deficit is financed, in particular by what combination of monetary issue and nonmonetary debt. In addition, the government may refinance its existing debt, and in particular the central bank may change the monetary issue by open market operations in outstanding government securities. Other relevant government policies are less aggregative and more structural: reserve requirements on banks and other financial institutions; regulation of interest rates on central bank or government assets or liabilities, and on intermediary liabilities to the public; specific taxes or tax credits, for example, with respect to investments, depreciation, capital gains and losses, property incomes.

Expectations about the next quarter and about many future quarters affect the current saving, investment, and portfolio behavior of economic agents. The relevant variables include commodity prices, asset prices, business profits, unemployment, government policies—any variables on which the outcomes of intertemporal decisions depend. Expectations, and the confidence with which they are held, vary among agents. In some degree they are formed by previous experience; in some degree they depend on current economic performance.

The horizons relevant to current economic behavior differ markedly among households and among business firms. At one extreme are immortal institutions like Harvard and Yale, whose current expenditures are the outcome of calculations of indefinitely sustainable consumption, whose future receipts are so fungible forward and backward in time that it is only their present value that matters. At the other extreme are households, often poor or young or both, and businesses, often new or small or both, without cashable assets or lines of credit. Their current expenditures for goods and services, consumption or investment,

are constrained by their cash receipts in the same quarter. There are many intermediate cases, including consumers whose horizons range from a few years to a lifetime. But the presence of both wealth-constrained and liquidity-constrained agents is a fact of considerable economic significance. Expectations, particularly those concerned with a long future, are more important for those for whom liquidity is not a binding constraint. Liquidity-bound consumers and businesses will spend all their disposable resources over a few quarters anyway. Thus we should not be surprised if both permanent income and current cash income are important for aggregate consumption, and for its response to temporary tax reductions and transfers. Likewise we should not be surprised if current cash flow, as well as long-run calculation of profitability, affects business investment.

Our objective is to model the process of asset accumulation and economic activity just sketched and to estimate models of this type for the United States. With such an empirical model, government policies, structural changes, institutional innovations, and demographic or technological trends can be simulated to estimate shorter- and longer-run consequences. Emphasis on financial markets and institutions permits systematic examination of financial policies and innovations, and of the financial consequences of other policies and developments. Consistent tracking of asset stocks is necessary to answer questions about the long-run impacts of short-run cyclical fluctuations and stabilization policies on capital accumulation.

Here is a sample of questions that the projected model is designed to address:

Effects of government budget deficits and debt. Do they crowd out or crowd in private capital formation? How does the answer to this question depend on the length of time allowed for the economy to adapt, on the degree of slack in resource utilization, and on the mixture of monetary and nonmonetary financing of the deficit? How do debt management and monetary policies, changing the relative supplies of government bonds of long maturity, government obligations of short maturity, and base money, affect the structure of interest rates and the paths of economic activity and prices? Has the historical decline, over the past three decades, in federal debt relative to private debt and equity raised or lowered the cost of capital for real investment? What would happen if this trend continued? How does social security affect private saving and capital formation?

Effects of regulations and innovations on financial intermediation. Structural innovation in financial institutions has proceeded rapidly in recent years, in part causing, and in part caused by, changes in government regulations. Their macroeconomic effects, as well as their consequences for financial variables, are the subject of considerable interest and conjecture. Further changes are in prospect. What are the effects of raising or lifting deposit rate ceilings? What happens when savings deposits, money market funds, overnight loans, and credit or overdraft lines become better and better substitutes for checking accounts?

A model suited to answer questions such as these needs certain features that standard macroeconometric models usually do not have, including the following:

1. *Disaggregation of assets and agents.* Obviously it is difficult to investigate the effects of regulations of financial institutions and assets—interest rate ceilings, quantitative restrictions, reserve requirements, etc.—unless the specific institutions and assets are distinctly recognized in the model.

2. *An explicit supply/demand modeling of asset markets and yield structures.* As a rule, empirical models rely on historically estimated chains of relationships of yields—by maturity, risk class, and other differentiations—to determine yield structures. That procedure forecloses any possibility of altering rate relationships by changes in relative asset supplies.

2. Framework for Accounting and Analysis

The accounting framework is simple. Consider a matrix in which rows i represent assets or commodities (e.g., currency, government bonds, equities, consumption goods, labor services), and columns j represent economic sectors (e.g., households, commercial banks, nonfinancial businesses, governments, rest of the world). An entry x_{ij} then represents the net purchases—a negative entry means net sales—of the item during a particular quarter, or any time period. If the matrix is a complete closed system, each row and each column must sum to zero. A row accounts for all sectors' sales and purchases of a particular item, and they must balance. A column accounts for a single sector's purchases and sales of all items, and these also must balance. This format can accommodate any desired degree of disaggregation, varying the numbers of sectors and items. Table 29.1 is illustrative.

The accounting framework comes to life as an economic model when the entries x_{ij} , at least some of them, become variables to be explained by the behavior of the sector. The rows, at least some of them, are then interpreted as markets, and the zero sums of these equations become conditions determining the values of some variables rather than merely ex post accounting identities. In general, a matrix of N rows will provide $N-1$ independent equations and permit their simultaneous solution for $N-1$ variables. These are the within-period endogenous variables of the model. If the period is a quarter, each of these variables is assumed to take on one and only one value each quarter, a value that is determined during that quarter.

The equation system describes these within-period endogenous variables as functions of (1) predetermined endogenous variables, state variables whose values for this period were fixed prior to the current period, whose values for the next period will depend on this period's outcomes and (2) exogenous variables, whose values do not depend systematically on the outcomes of the system in either the current period or previous periods; these include (a) settings of policy instruments, (b) nonpolicy variables whose values, like those of policy instruments, must be known or assumed, and (c) random shocks drawn from probability distributions whose parameters must be assumed or estimated.

The most important predetermined endogenous variables, in our applications, are stocks of financial and real assets. The single-period model determines the increment to each stock and thus fixes its new value for the next period. The stock-flow identities are auxiliary equations needed to track the economy from period to period. A long-run equilibrium is one in which stocks are in some sense stationary—that is, their dollar values are all constant from period to period or are all growing by the same percentage.

Other variables might be treated as predetermined endogenous, if it were thought that their proximate determinants were all lagged by one period or more. For example, it might be convenient and reasonable to regard wages and prices as dependent on employment and output in the last period but not on contemporaneous measures of economic activity.

[Section 3, a formal description of the theoretical model, has been omitted.—Ed.]

4. The Empirical Model: Balance Equations and Endogenous Variables

The model we are currently trying to estimate and simulate has the coverage shown in Table 29.1. We have aggregated the flow-of-funds data compiled by the Federal Reserve Board into the first fourteen rows of Table 29.1. The flows comprise the bulk of financial saving, lending, and borrowing, and they augment the stocks of financial assets and liabilities. Capital gains and losses—in practice estimated primarily for equity—are also shown in rows 7 and 13. They account for the difference between the increase of net worth (row 12) and the amount of “net financial saving” (row 14).

“Net financial saving” represents the algebraic sum of the previous rows. It is in principle the *IS* row. This row could also be reached by summing nonfinancial receipts and outlays. These entries are in rows 17 through 21, and their sum is in row 16 as “investment less saving.” In principle this is the same as row 14 with sign reversed. In fact there are statistical discrepancies, shown in row 15.

Business retained earnings, net of depreciation, are imputed to shareowners, mainly households, as if they were dividends. They are shown separately in row 17. This means that “investment less saving” of business is just net investment, as it should be in the *IS* equation. The retention of earnings also appears in other columns, mainly households, as saving. Correspondingly, above line 15, retention of earnings is an issue of equity by business and a purchase of equity by households and other shareowners.

In Table 29.1 we show only one commodity row and one labor row. Thus the “real” side of the economy is disaggregated less than the financial side, a reversal of the usual emphasis in macroeconomic models. Work in process, however, is intended to disaggregate commodity and labor markets further. The

Table 29.1

Empirical Model, Uses—Sources of Funds; 1977 Flows at Annual Rates (end-of-year stocks)

	Household	Commercial Banking	Savings Institutions	Insurance & Pension Funds	Miscellaneous Intermediaries	Business	Federal Government	State & Local Governments	Rest of World	Discrep- ancies	Sum	Within-Period Endogenous Variable
1. Currency and reserves	8.3* (89.9)	3.3† (40.5)					-11.6 (-130.4)				=0	Y or P
2. Demand deposits	11.3 (114.6)	-23.2 (-276.4)	0.8 (4.7)	0.8 (7.7)	0.2 (5.9)	1.3 (74.5)	4.4 (7.0)	0.9 (14.1)	1.9 (18.4)	1.6 (29.6)	=0	demand deposits at commercial banks
3. Time deposits at commercial banks	39.2 (428.8)	-42.6 (-473.3)					0.1 (0.9)	4.2 (41.6)	1.4 (11.4)	-2.4 (-9.4)	=0	time deposits at commercial banks
4. Time deposits at savings institutions	69.1 (563.0)		-89.1 (-563.0)								=0	time deposits at savings institutions
5. Shorts	13.1 (52.9)	-28.7† (-40.6)	3.9 (29.0)	5.2 (20.3)	-7.2 (-32.5)	-3.3 (45.2)	-18.0 (-193.1)	15.4 (51.9)	17.4 (57.9)	2.4 (9.4)	=0	short rate
6. Longs	5.9 (193.0)	13.1 (205.5)	5.0 (67.0)	52.8 (382.2)	-9.3 (-35.9)	-24.6 (-302.2)	-51.6 (-327.3)	-12.5 (-215.7)	21.2 (33.4)		=0	long rate
7. Equity ^a Purchases	33.5	-0.6	0.4	-8.9	-2.5	-28.7			7.0		=0	equity rate
Capital Gains ^a	-82.8 (777.0)	-4.8 (-57.5)	-0.0 (4.8)	-4.6 (137.7)	-0.2 (-8.7)	102.3 (-893.0)			-10.2 (39.7)			
8. Nonmarketables	51.5 (726.7)			-40.1 (-588.7)			-11.4 (-138.1)				=0	household nonmarketables
9. Mortgages	-82.4 (-568.9)	27.7 (179.0)	62.0 (462.3)	6.1 (108.1)	-0.9 (15.1)	-37.0 (-349.6)	23.9 (139.5)	0.6 (14.7)			=0	mortgage rate
10. Loans	-49.8 (-368.1)	47.9 (426.1)	5.6 (44.4)	3.7 (46.8)	20.6 (78.4)	-26.8 (-208.4)	5.1 (76.2)	-1.2 (-21.2)	-1.8 (-38.7)	-3.4 (-35.4)	=0	loans at commercial banks
11. Miscellaneous	6.6 (52.6)	7.9 (-3.3)	-3.9 (-9.4)	-14.9 (-114.0)	-0.7 (-22.2)	20.8 (156.8)	4.7 (67.6)	1.1 (10.6)	-25.3 (-121.4)	3.7 (-19.3)	=0	[exogenous]
12. Financial net worth	23.6 (2061.5)	0.0 (0.0)	4.6 (39.9)	0.0 (0.0)	0.0 (0.0)	4.1 (-1474.7)	-54.3 (-497.7)	8.5 (-104.2)	11.7 (0.3)	1.8 (-25.1)	=0	
13. Capital gains	82.8	4.8	0.0	4.6	0.2	-102.3	0.1	0.0	10.2	-0.4	=0	

TABLE 29.1 (CONTINUED)

	Household	Commercial Banking	Savings Institutions	Insurance & Pension Funds	Miscellaneous Intermediaries	Business	Federal Government	State & Local Governments	Rest of World	Discrepan- cies	Sum
14. Net financial saving	106.4	4.8	4.6	4.6	0.2	-98.2	-54.2	8.5	21.9	1.4	=0
15. Discrepancy	-30.1			-8.8		30.4	2.8	7.9	-1.0	-1.4	=0
16. Investment less saving	-76.3			-5.4		67.8	51.4	-16.4	-20.9	0.0	=0
17. Interest, dividends and related earnings	-194.0			0.0		176.9	29.1	-6.5	-5.5		=0
Interest and dividends	-156.2			0.0		139.1	29.1	-6.5	-5.5		=0
Retained earnings (net of depreciation) [†]	-37.8			0.0		37.8	—	—	—		=0
18. Taxes and transfers	79.1			12.9		313.1	-201.7	-199.1	-4.2		=0
Taxes	287.1			12.9		303.4	-374.5	-228.8	—		=0
Transfers	-207.9			—		9.6	172.7	29.7	-4.2		=0
19. Labor	-1196.3			—		988.4	66.4	141.5	—		=0
20. Goods and services	1288.6			6.2		-1679.2	78.6	107.4	-11.1		=0
						+209.6 ^{**}					
21. Miscellaneous	-53.7			-24.5		59.0	79.0	-59.8	—		=0
Sum(1-11)+13						0	0	0	0		=0
+15+Sum(17-21)											
=12+13+15+16=0											

Sources: Flow-of-Funds and National Income and Product Accounts.

* Currency held by the nonbank public has been allocated entirely to households.

† Bank reserves include required reserves of 3.8 (40.9) and net free reserves of -0.5 (-0.4).

‡ Bank holdings of shorts include assets of -4.5 (65.5) and liabilities of -24.3 (-106.1).

§ The equity liability of commercial banks, insurance and pension funds, and miscellaneous

financial intermediaries are taken to be equal to the financial net worth reported by these institutions.

** Purchase of goods and services by business are that sector's gross physical investment.

† Retained earnings of businesses (37.8) are treated as issues of equity to households. They are consequently included in business (-) and household (+) savings.

commodity row of Table 29.1 attributes all gross production to the business sector. That sector keeps part of it, for gross fixed investment and inventory accumulation, and sells the rest to the other sectors. In the labor row, households supply worker-hours to the other sectors.

The first 10 rows of Table 29.1, plus the "IS" row 16, provide eleven equations of our model. (Rows 12 and 13 are memoranda concerning the previous rows, but provide no independent information. Row 11—"miscellaneous"—can be taken as exogenous.)

There will be ten within-period endogenous variables. One choice of this list, not the only possible one, is given in the final column of the table. Each variable appears in the row with which it is most naturally associated—even though in principle all variables are involved simultaneously in the clearing of each market. Thus market-determined rates of return or asset prices are associated with the assets to which they refer. For some rows, quantities rather than prices are assumed to make the within-period adjustments. This occurs for financial assets on which interest rates are legally regulated (deposits) or are institutionally slow to adjust (bank loans).

The markets corresponding to the rows always "clear" *ex post*; actual transactions net to zero. But we distinguish between transactions realized *ex post* and transactions desired *ex ante* at the prevailing values of the within-period endogenous variables—prices, interest rates, incomes, etc. In some markets, those we will label "cleared," these variables adjust so that realized and desired transactions coincide. In "noncleared" markets, some agents will be unable fully to execute desired transactions. (Smith and Brainard [1974] discuss the modeling and estimation of rationed markets.) In Table 29.1 demand deposits are identified as a noncleared market. With the nominal interest rate on deposits restricted by law, banks generally stand willing to accept more deposits than are offered. Likewise, the rates of returns on savings accounts are exogenously restricted by rate ceilings; in these markets, too, the institutions generally accept all deposits. However, there have been some periods of time when the ceilings were not effective, and these markets were cleared by the deposit rates. Nonmarketable securities are similarly modeled. They are principally savings bonds available on tap from the federal treasury. Thus in the short run the government's issues adjust to other sectors' demands.

Bank loans to business are also treated as an "uncleared" market. This is appropriate for most of the sample period to which a model may be fitted, although it seems less realistic today. Here the reason was not legal regulation but the behavior of the banking industry. In the short run, banks had explicit or implicit credit line commitments to their business customers, which they felt compelled to honor at going rates. Subsequently, if meeting these demands leads to more lending than the banks desire, the loan rate was increased. Or it was lowered if banks found themselves with too few loans. This adjustment of the loan rate, an administered price, we model as taking place between periods. The

loan rate is another predetermined endogenous variable, and its adjustment is another transitional equation.

Going below row 16, we are implicitly treating the markets for labor and commodities as noncleared. Wages are determined by Phillips curve equations describing the sticky period-to-period adjustment for wages to labor market disequilibria. The labor market is "cleared" by workers' accepting what jobs are offered. Commodity transactions are also demand-determined within any period. Between periods prices move to keep up with normal unit labor costs, but with some sensitivity to demand pressures in the previous period.

An alternative formulation for any or all of these three noncleared markets would make both quantities and prices endogenous within a period. For example, the wage adjustment could depend in part on the contemporaneous excess supply, while the adjustment would not be sufficient to clear the market. The Phillips curve would then be another equation in the one-period model. In the extreme "classical" regime, markets would be cleared by flexible money wages and prices; therefore price P would replace output Y as an endogenous variable.

Rows 17, 18, and 21, which complete the accounts, are not really markets, and there are no prices that naturally correspond to the items. In the case of private transfers, households' receipts are taken to adjust passively to other sectors' outlays. In the case of taxes net of government transfers, transactions depend on the tax code and on existing laws defining entitlements to transfers. Given the legislation determining sectors' net tax liabilities, we can regard the row as determining the government's net receipts. Dividends and interest payments reflect predetermined asset positions and contractual obligations. Since these positions balance out, the payments and receipts based on them automatically sum to zero.

5. The Empirical Model: Sectors and Their Behavior

Columns refer to sectors. In this dimension, too, the model builder has discretion, within data limitations, about the degree of disaggregation. For each sector, the column entries sum to zero, as in Table 29.1.

In Table 29.1 four financial sectors are distinguished, in keeping with our emphasis on financial disaggregation. Indeed, further disaggregation would be desirable. For example, for purposes of modeling monetary policy, the behavioral differences between money market banks and other commercial banks are important.

The key nonfinancial sectors are those for households, business, and federal government. With respect to households, there are several possible directions of useful disaggregation. One would be to segregate entities such as personal trusts and nonprofit organizations, now lumped together with families and individual consumers. Another would be to make distinctions by age or other demographic characteristics. The split that we regard as most important, for reasons argued

above, is between liquidity-constrained and wealth-constrained households. We are trying to implement this distinction empirically, in ways described elsewhere (Smith and Kowalewski 1979).

In the case of nonfinancial business, separate columns for corporate and non-corporate business would be desirable for some purposes. Corporations are the originators of equities and other financial claims for which market valuations are available. Another direction of disaggregation, columns for different industries, would be associated with addition of rows for different commodities.

For these sectors, financial institutions, households, and business, the column entries are to be explained by behavioral equations. The federal government column is partially exogenous as far as purchases, transfer rules, tax functions, monetary policies, and debt issue are concerned. Budget outcomes are endogenous because realized outlays and revenues depend not only on policies but also on economic performance during the period. Other sectors—state and local governments and rest of world—should be similarly modeled. At the current stage of the model under construction, these three sectors are lumped together as a completely exogenous column. For example, federal bonds, state and local bonds, and foreign bonds enter simply as exogenously supplied long-term marketable bonds.

Behavioral equations for financial institutions, households, and business follow general principles familiar from previous papers by the authors. For each sector we identify those “prior claims” that the sector takes as exogenous for the period. This quantity constrains its decisions about other entries in the column. It consists of items that are predetermined by earlier decisions or by inherited stocks—for example, interest receipts or payments—or by the decisive side of noncleared markets—for example, deposits as seen from banks’ standpoint. Subject to the budget constraint imposed by these prior claims, a sector is imagined to formulate long-run target asset and wealth positions based on current and expected interest rates, incomes, and other relevant variables. Actual positions are then adjusted toward these targets. Transitory factors such as windfall gains and losses will also influence these adjustments.

In relating sectoral portfolio choices to asset yields, our general presumption is that our broad asset categories are gross substitutes. That is, an increase in an asset’s yield increases the demand for the asset itself and decreases demand for others individually and collectively. In estimations, our priors conform to this presumption, but the final estimates are not constrained to do so.

In some cases it is convenient to imagine agents who make decisions sequentially or hierarchically. The substantive content of a hierarchical approach is that simplifying restrictions are placed on the explanatory variables. In principle, every entry in a column should depend on the same list of explanatory variables. In a hierarchical model, a sequence of simplified decisions is specified. For example, the consumption-saving decision might be assumed not to depend on the fine detail of asset yields and inherited holdings that influence portfolio

decisions, but on an average yield and on total initial wealth. The portfolio allocation might then be based on asset yields, inherited holdings, and available saving, but not on some of the separate factors (such as income expectations, relative commodity prices, and demographic detail) that motivated that saving. Although theory tells us that separations of this type are legitimate only under rather strong assumptions, there is often a compelling need for plausible, rough approximations in empirical work. In the current version of the model, households have been depicted as first allocating income between consumption and savings and then making an independent allocation of the saving among the several assets. Similarly, business firms have been described as making production and investment decisions separately from financing decisions. The Purvis-Smith discussion (Purvis 1978; Smith 1978b) is concerned with the gains and costs of a hierarchical approach. The Backus-Purvis paper (1980) espouses and implements an integrated model of household expenditure and financial decisions, which will be used in later versions of the empirical model.

6. Specification and Estimation of Asset Demand Equations

At the first stage in developing the empirical model described above, we have focused our attention on the financial markets corresponding to the first ten rows of Table 29.1. Understanding the behavior of these markets is crucial to understanding the response of the economy to policy actions and various shocks that impinge directly on financial sectors. A distinctive feature of the financial block of the model is that separate supply and demand equations are specified for a relatively large number of assets rather than relying on explicit aggregation or rate structure equations to reduce the dimensionality of the model. Such simplifying assumptions and restrictions are probably harmless for some purposes, but they beg many of the questions we would like to address. For example, with a term structure equation the ability of monetary and fiscal authorities permanently to alter the relative rates of return among financial and physical assets is ruled out *a priori*.

Similarly, debt accumulation for capital formation—crowding out or crowding in—and financial innovations or changes in regulations have consequences that depend crucially on the quantitative magnitudes of the substitution relationships among assets.

In this section we describe the specification and estimation of the asset demand and supply equations for households, commercial banks, savings institutions, and insurance and pension funds. These estimated equations will, in principle, allow us to simulate the response of financial variables—rates and quantities—to changes in exogenous supplies of and demands for assets of the other sectors—government, the rest of the world, and business.

Asset Demand Specification

Although the various sectors demand and supply different assets, liabilities, and commodities, we have assumed that the equations that describe sectoral behavior have the same general form. Each sector's assets have been divided into two groups according to whether or not the items are directly controlled by the sector. This division differs from sector to sector, and in the short- and long-runs.

In the case of financial intermediaries—commercial banks, savings institutions, and insurance and pension funds—the controlled flows reflect portfolio decisions about the allocation of a predetermined aggregate of prior claims. In particular a typical intermediary is constrained by:

$$\sum_{i=1}^n a_i = W = NW - \sum_{i=1}^n R_i$$

where the a_i are directly controlled financial items constrained to be equal to total disposable assets (W) equal to net worth minus prior claims R_i . (Predetermined liabilities—e.g., bank deposits—are a negative prior claim.)

We have separated the portfolio decision into two parts: determination of a long-run desired portfolio, and short-run adjustment toward that portfolio. Each sector's long-run portfolio allocation is assumed to depend on such variables as rates of return, income, and the expected quantity of disposable assets:

$$\frac{a^*}{W^e} = Ax.$$

Here a^* is an n -dimensional vector of desired holdings; W^e is expected disposable assets; x is a k -dimensional vector of explanatory variables, with $x_1 = 1$; and A is the $n \times k$ matrix of long-run coefficients. If desired demands are required to satisfy the balance sheet identity, then

$$1 = \sum a_i^* / W^e = \sum_{i=1}^n A_{i1} + \sum_{j=2}^k \left(\sum_{i=1}^n A_{ij} \right) x_j$$

can hold for all values of x_j if and only if

$$\sum_{i=1}^n A_{i1} = 1$$

$$\sum_{i=1}^n A_{ij} = 0 \quad j = 2, \dots, k.$$

That is, an increase in disposable assets must be held somewhere, and a change in any proportion must be at the expense of the remaining proportions.

It is assumed that the short-run asset demand functions take the familiar partial-adjustment form. However, our specification differs in two respects from the type frequently assumed. First, the adjustment of any particular asset depends, in principle, on a complete description of the short-run disequilibrium. For example, the speed with which a discrepancy between desired and actual holdings of bonds is eliminated depends on whether the bond disequilibrium is the counterpart of a discrepancy between desired and actual holdings of cash, or desired and actual mortgages. Second, consistency requires that the variables that give rise to partial adjustment in the demand for one asset must give rise to offsetting adjustments in the demand for other assets, given the constraint on disposable assets. Thus the equations are of the form:

$$\Delta a = \underset{n \times n}{E} [a^* - a_{-1}] + \underset{n \times p}{F} (S - S^e) + \underset{n \times q}{Gz}$$

where the z are q explanatory variables that are thought to influence adjustment behavior directly and the $S_t - S_t^e$ are the sources of unanticipated changes in disposable assets (such as unplanned saving or unexpected capital gains) with $\Sigma (S_t - S_t^e) = W - W^e$.

The E_{ij} can be interpreted as the partial effects on holdings of the i th asset of a unit increase in $W^e - W_{-1}$ (and $W - W_{-1}$) that the sector desires to hold as the j th asset. The E_{ij} will sum across equations to one. E_{ij} is the partial effect on holdings of the i th asset of a unit increase in $S_j - S_j^e$ with $W^e - W_{-1}$ constant and $W - W^e$ increasing by one unit. The F_{ij} will therefore sum across equations to one. Finally, the G_{ij} will sum to zero since $W - W_{-1}$ is held constant.

[The sections on savings institutions, insurance and pension funds, commercial banks, and households have been omitted. They contain the details of the structural equations and coefficient estimates for these sectors.—Ed.]

Estimates

An important difference between this study and previous work is our explicit use of subjective prior information in the estimation. Most model builders mine the data¹ in search of plausible estimates. We hope to profit from direct use of the same vague information that leads investigators, *ex post*, to view some estimates as plausible and others as unacceptable. In particular, we have used the Theil-Goldberger mixed estimation technique to combine our prior beliefs with the data. This involves specifying prior means and a variance-covariance structure for the structural coefficients.²

Our prior means, which are reported together with OLS estimates in Tables 3

through 6³, are highly subjective, but we expect that most economists will find them qualitatively plausible. The long-run coefficients reflect our belief that most pairs of assets are gross substitutes: Stock demands depend positively on own rates and negatively on other rates. Own elasticities generally are in the range of 1 to 3 in absolute value. There is rough symmetry motivated by the idea that equal increases in all rates should not have large effects on demands. The adjustment matrix has diagonal elements between 0 and 1, with liquid assets adjusting more quickly than illiquid ones. Unexpected funds are allocated relatively more heavily into demand deposits and shorts than into other assets.

Unconstrained OLS results testify to the difficulty of obtaining significant and/or sensible coefficient estimates in models of this type. Fewer than half of the short-run rate responses and approximately half of the adjustment coefficients are significant, and there are a larger number of estimates quantitatively, if not significantly, far from the priors. Many are of the "wrong" sign, some significantly so. Although these results are typical of what one gets from time series data, they do not provide a sensible basis for simulation. Many of the policy experiments that we anticipate simulating with the model depend critically on estimates of the supply and demand equations, including their cross-elasticities, and it would be difficult to have much confidence in results that incorporate so many anomalies.

In previous work by Brainard and Smith (1979) and by Backus and Purvis (1980), the use of prior information removed virtually all of the "peculiar" estimates in the adjustment matrix that occurred with OLS but was less successful in eliminating "wrong" signs on interest rates in the short- and long-run demand equations. Mixed estimation of the savings, insurance, and household sectors repeats this experience. As shown in [deleted—Ed.] Tables 3, 4, and 6, the use of prior information substantially "improved" the estimates of the adjustment coefficients. Perhaps the most dramatic change relates to savings institutions' short-run demand for mortgages. According to the OLS estimates, an increase in the desired holdings of mortgages accompanied by an equal increase in disposable funds results in a *decrease* in mortgage demand. And increases in the desired holdings of other assets accompanied by increases in disposable funds lead to large sales of mortgages and purchases of assets not themselves desired. The mixed estimation virtually eliminates this anomaly. A number of other anomalous features of the OLS adjustment matrix are eliminated by using the mixed estimation procedure, and approximately three-fourths of the adjustment coefficients are substantially changed in the direction of the priors. The mixed estimates of the rate coefficients, taken as a group, do not appear qualitatively superior to the OLS estimates. For both estimation procedures, most of the own coefficients are of the "correct" sign, but from one-third to one-half of the cross-elasticities are of the "wrong" sign.

These results suggest that there are problems with our behavioral or statistical specifications. There are several possible statistical reasons for these problems:

(1) We devoted little attention to the intertemporal structure of errors. The partial adjustment specification involves a large number of parameters that may compensate for the lack of a more flexible error structure. But to the extent that it does, the estimates of those parameters will conflict with our prior views of plausible speeds of adjustment and cross-effects. (2) We have not dealt with the estimation problems created by the simultaneity of the system. (3) To keep the prototype model simple, we have aggregated several sectors where we know (e.g., in the savings and insurance and pension sectors) that subsectors differ significantly in behavior. The simulations of the model below provide clues to a number of features of our behavioral specification that may be causing difficulty.

7. Simulation of the Financial Block

Simulation of the model and its subsectors using pure priors for the coefficients serves several purposes. First, simulation provides a direct test of the consistency of the system's specification. Although the qualitative nature of the equilibriums of models like this can be derived analytically, the dynamics are intractable. Even if each individual sector behaves sensibly, the system as a whole may not. Second, simulation reveals unobvious qualitative implications of the coefficient priors and market specification for the response of the endogenous variables to policies or other shocks. In some cases there may be prior information about systemwide "multipliers." Discrepancies between such priors and the simulated multipliers would suggest re-examination of the specifications of individual sectors. Ideally, any prior information about reduced-form behavior would be used symmetrically with prior information about structural coefficients in the estimation itself. In any case, simulation provides a way of investigating the implications of the priors for the response of the system to various shocks and policy experiments for which there is no direct historical experience.

In this section we report results of simulating the financial block. The adjustment of financial variables required to satisfy asset demand and supply equations described in Table 29.1 is described, taking as predetermined the level of output, prices, and the capital stock, and taking the financial behavior of businesses, the rest of the world, and government to be exogenous. Although simulations of the financial block alone do not test a number of the distinctive features of the model—those that relate to the endogeneity of capital stock and government debt—understanding the behavior of the financial sector is a step toward understanding the complete model.

Simulation of the financial block did not reveal any outright inconsistencies of specification, but it did reveal a number of features of our specification with which we are not content. No doubt we will find others. The following are among the difficulties.

Capital gains are volatile and tend to induce large fluctuations in asset demands and rates. In the prototype model, capital gains in equity are, in the first

instance, held in equity, adjustment starting one period later. The intent was to implement the empirical evidence that capital gains and losses have relatively small effects on the demands for other assets in the short run. What the specification actually did, however, was simply postpone the strong effects of gains or losses for one quarter. We have now smoothed changes in q and therefore capital gains in equity.

Another specification "error" that seems to be creating difficulties in the simulations is the assumption that banks fully accommodate loan demands. Perhaps because of the large variations in household loan demand resulting from the treatment of capital gains, loan demand is highly volatile and forces substantial and unrealistic reallocation of bank portfolios. One possible solution is to allow some adjustment of the loan rate within the period, as may be anyway more realistic in recent years. Another is to assume some rationing of credit.

A third feature of the specification with which we are not completely happy is our assumption of partial adjustment. Slow adjustment of quantities forces large fluctuations in the endogenous interest rates to clear markets when there are exogenous shocks to quantities supplied. In the case of demand deposits and currency, which serve as buffers or "temporary abodes of purchasing power," the partial adjustment assumption seems particularly inappropriate.

Simulation Results

Tables 29.2 through 29.7 report a variety of simulations illustrating some of the experiments we wish to explore. The first two simulations illustrate the response of the system to two standard tools of monetary policy: open-market operations and changes in reserve requirements. Although there are fluctuations reflecting the aforementioned treatment of capital gains, the simulations are qualitatively in accord with usual presumptions. Increasing reserves or decreasing reserve requirements decreases all interest rates. Changes in the short and long rates are almost equal; the simulations assume that future expected short rates move with the current short rates. The mortgage rate moves more than these two rates, reflecting substantial responses by banks and other financial intermediaries. Moreover, the mortgage market is assumed to be cleared by the mortgage rate, with no rationing. Perhaps the mortgage market should be treated similarly to the loan market. The equity rate moves somewhat less than other rates, reflecting the less than perfect substitutes assumption of asset demands.

Simulations (not shown) of the effect of open-market operations in long-term securities and changes in reserve requirements on time deposits look very similar to those shown in Tables 29.2 and 29.3. Together these results suggest that the (similar) effects of these actions on the excess demand for unborrowed reserves dominate their differences in other markets.

Tables 29.4, 29.5, and 29.6 report the consequences of changing the relative supplies of various assets. For these experiments, most individuals' "reduced

Table 29.2

Open Market Operations: \$1 Billion Purchase of Short-Term Securities

Year	Qtr.	Differences from Base Simulation			
		RSHORT	RLONG	REQUITY	RMORT
1971	1	-0.521	-0.210	-0.189	-0.276
1971	2	-0.379	-0.181	-0.069	-0.229
1971	3	-0.348	-0.184	0.022	-0.203
1971	4	-0.328	-0.287	-0.236	-0.359
1972	1	-0.304	-0.215	-0.085	-0.273
1972	2	-0.116	-0.144	0.067	-0.159
1972	3	-0.371	-0.342	-0.290	-0.435
1972	4	-0.315	-0.266	-0.097	-0.326
Average of last 3 Qtrs.		-0.267	-0.251	-0.107	-0.307
Demand Deposits at Commercial Banks					
1971	1	3.024			
1971	2	4.271			
1971	3	5.057			
1971	4	1.965			
1972	1	3.883			
1972	2	5.505			
1972	3	1.118			
1972	4	3.847			
Average of last 3 Qtrs.		3.490			

Note: Rates are annual percentages. Stocks are in billions of dollars.

Table 29.3

Reserve Requirements: Increase of 0.01 in Required Reserve Ratio on Demand Deposits

Year	Qtr.	Differences from Base Simulation			
		RSHORT	RLONG	REQUITY	RMORT
1971	1	0.778	0.278	0.245	0.368
1971	2	0.574	0.266	0.113	0.342
1971	3	0.637	0.317	0.018	0.363
1971	4	0.479	0.413	0.304	0.516
1972	1	0.499	0.352	0.147	0.449
1972	2	0.297	0.288	-0.006	0.346
1972	3	0.526	0.499	0.359	0.633
1972	4	0.543	0.449	0.176	0.556
Average of last 3 Qtrs.		0.455	0.412	0.176	0.512
Excess Reserves Borrowed Reserves Demand Deposits at Commercial Banks Time Deposits at Commercial Banks					
1971	1	-0.091	0.455	-3.733	-5.449
1971	2	-0.067	0.297	-5.411	-6.803
1971	3	-0.051	0.195	-6.802	-8.543
1971	4	-0.097	0.405	-2.997	-10.849
1972	1	-0.067	0.256	-5.394	-10.325
1972	2	-0.043	0.127	-7.163	-10.849
1972	3	-0.102	0.414	-2.307	-12.870
1972	4	-0.081	0.314	-5.614	-12.528
Average of last 3 Qtrs.		-0.075	0.285	-5.028	-12.082

Note: Rates are annual percentages. Stocks are in billions of dollars.

Table 29.4

Operation Twist: \$1 Billion Purchase of Longs, Sale of Shorts

Year	Qtr.	Differences from Base Simulation			
		<i>RSHORT</i>	<i>RLONG</i>	<i>REQUITY</i>	<i>RMORT</i>
1971	1	0.004	-0.025	-0.020	-0.028
1971	2	0.025	-0.011	0.002	-0.009
1971	3	0.043	-0.013	0.002	-0.009
1971	4	0.001	-0.022	-0.019	-0.025
1972	1	0.024	-0.012	-0.001	-0.011
1972	2	0.035	-0.010	0.005	-0.007
1972	3	-0.001	-0.024	-0.021	-0.028
1972	4	0.019	-0.015	-0.002	-0.014
Average of last 3 Qtrs.		0.018	-0.016	-0.006	-0.016
Demand Deposits at Commercial Banks					
1971	1	-0.015			
1971	2	0.128			
1971	3	0.136			
1971	4	-0.109			
1972	1	0.92			
1972	2	0.154			
1972	3	-0.134			
1972	4	0.077			
Average of last 3 Qtrs.		0.032			

Note: Rates are annual percentages. Stocks are in billions of dollars.

Table 29.5

Freddie Mac: \$1 Billion Purchase of Mortgages, Sale of Longs

Year	Qtr.	Differences from Base Simulation			
		<i>RSHORT</i>	<i>RLONG</i>	<i>REQUITY</i>	<i>RMORT</i>
1971	1	0.005	0.012	0.007	-0.007
1971	2	-0.006	0.002	-0.004	-0.014
1971	3	-0.004	0.004	-0.001	-0.013
1971	4	0.003	0.006	0.004	-0.005
1972	1	-0.005	0.002	-0.003	-0.013
1972	2	-0.002	0.003	-0.000	-0.011
1972	3	0.002	0.005	0.003	-0.006
1972	4	-0.003	0.002	-0.003	-0.011
		Demand Deposits at Commercial Banks	Mortgage Liability of Households		
1971	1	0.056	0.151		
1971	2	-0.039	0.175		
1971	3	-0.014	0.199		
1971	4	0.043	0.228		
1972	1	-0.032	0.234		
1972	2	-0.008	0.237		
1972	3	0.033	0.249		
1972	4	-0.030	0.244		

Note: Rates are annual percentages. Stocks are in billions of dollars.

Table 29.6

Stock Market Intervention: \$1 Billion Purchase of Equity, Sale of Shorts

Year	Qtr.	Differences from Base Simulation			
		<i>RSHORT</i>	<i>RLONG</i>	<i>REQUITY</i>	<i>RMORT</i>
1971	1	0.017	-0.005	-0.023	-0.012
1971	2	0.029	-0.002	-0.001	-0.005
1971	3	0.055	-0.002	0.004	-0.001
1971	4	0.002	-0.016	-0.023	-0.022
1972	1	0.028	-0.005	-0.004	-0.007
1972	2	0.047	0.001	0.008	0.003
1972	3	-0.000	-0.019	-0.025	-0.025
1972	4	0.021	-0.008	-0.005	-0.010
Average of last 3 Qtrs.		0.003	-0.009	-0.007	-1.011
Demand Deposits at Commercial Banks					
1971	1	0.065			
1971	2	0.125			
1971	3	0.160			
1971	4	-0.138			
1972	1	0.080			
1972	2	0.197			
1972	3	-0.172			
1972	4	0.054			
Average of last 3 Qtrs.		0.026			

Note: Rates are annual percentages. Stock are in billions of dollars.

form" priors are probably less certain than for open-market operations. As can be seen in Table 29.4, debt management is far from impotent, even though switching longs for shorts has a much smaller effect than switching either one for high-powered money. A \$1 billion shift from short to long debt (about one-third of one percent of government debt in 1971) decreases the long-short rate differential by about 3.5 basis points. The effect is remarkably close to previous estimates.⁴

The effect of the recent meteoric rise of mortgage-backed bonds can be analyzed in a manner similar to debt management. In the model, the growth of such bonds appears as an increase in mortgage assets and long liabilities of federal agencies. In Table 29.5, a simulated issue of an additional \$1 billion of longs and purchases of mortgages results in a \$0.2 billion increase in mortgage credit granted to households—that is, there is substantial slippage between the agency actions and households.⁵ The rate differential created by such a transaction is small.

An important difference between this model and most other financial models is that capital is not perfectly substitutable for interest-paying financial assets. As a consequence, the magnitude of the effect of conventional monetary policy is only partially, and imperfectly, captured in the response of market rates on government securities. The substantial differences in the quantitative response of the required rate on capital and these rates can be seen in the simulations reported above.

Table 29.7

Regulation Q Ceilings on Deposit Rates: 25 Basis Point Increase at Both Commercial Banks and Savings Institutions

Year	Qtr.	Differences from Base Simulation			
		<i>RSHORT</i>	<i>RLONG</i>	<i>REQUITY</i>	<i>RMORT</i>
1971	1	-0.069	-0.018	-0.018	-0.036
1971	2	-0.077	-0.048	-0.035	-0.082
1971	3	-0.069	-0.060	-0.012	-0.094
1971	4	-0.030	-0.063	-0.039	-0.091
1972	1	-0.049	-0.069	-0.038	-0.108
1972	2	-0.002	-0.055	-0.006	-0.089
1972	3	-0.043	-0.087	-0.060	-0.126
1972	4	0.011	-0.061	-0.020	-0.095
Average of last 3 Qtrs.		-0.011	-0.068	-0.029	-0.103
		Demand Deposits at Commercial Banks	Time Deposits at Commercial Banks	Time Deposits at Savings Institutions	Mortgage Liability of Households
1971	1	-1.579	3.729	1.922	0.327
1971	2	-2.226	5.440	2.598	0.926
1971	3	-2.248	6.455	3.184	1.855
1971	4	-2.692	6.572	3.413	2.233
1972	1	-2.576	7.007	3.728	2.571
1972	2	-2.490	7.615	3.830	3.113
1972	3	-3.128	7.769	3.953	3.140
1972	4	-3.023	7.516	3.670	3.148
Average of last 3 Qtrs.		-2.880	7.633	3.818	3.134

Note: Rates are annual percentages. Stocks are in billions of dollars.

The imperfect substitutability of bonds and capital also means that increases in the quantity of government debt may decrease rather than increase the required rate of return on capital. There may be "crowding in" rather than "crowding out." In the complete model, the consequences of government deficits for supplies of government debt and crowding out will be reckoned automatically. The effect of such changes in relative supplies can be inferred from a simulation of the financial block by an "open-market operation" involving government debt and equity. Indeed, such open market operations could conceivably be used as an instrument of monetary policy. Table 29.6 illustrates a \$1 billion shift from shorts to equity. The equity rate decreases, but the impact is damped by the concurrent increase in q , which increases the supply of capital at market prices.

An important policy question for which there is no easy answer is the effect of changes in deposit ceiling rates on market interest rates, the cost of capital, and the degree of intermediation. Table 29.7 considers the effect of increases in the ceiling rates on deposits at both commercial banks and savings institutions. For such a change there is a substantial reduction in demand deposits and an increase in time and savings accounts. As can be seen from the table, such an increase is "expansionary" in that it lowers the rates on various assets, particularly mortgages.

The effects of increasing the ceiling rate at one or the other of the two types of intermediary separately can easily be simulated. Our priors imply a high degree

of substitution between deposits, and either of these changes results in a substantial shift from one intermediary to the other. Increases in the ceiling rate on bank time deposits is contractionary, reflecting the absorption of reserves by reserve requirements on their deposits, whereas the increase in the rates at thrift institutions is expansionary.

8. Conclusions

It is our hope that with some improvement of the specification and the use of a somewhat more sensible error structure it will be possible to obtain estimates that are in rough accord with our priors and result in credible simulations. We also suspect, however, that it will be difficult to distinguish, on the basis of sample fits, our model from other models—for example, those that assume perfect substitutes. Such discrimination may require the use of information about structural parameters from other sources: cross-section studies, other time series studies on different data, and studies of particular markets, such as that of Friedman (1977) on corporate bonds.

Notes

1. We do not intend this as a derogatory term. As Leamer (1978) points out, data-mining suggests purposeful search. Fishing, by contrast, has implications of unstructured activity.
2. Brainard and Smith (1979) have developed a tractable procedure for computing the prior covariance matrix for a complete system of asset demands. The covariance matrices actually used in estimation are available on request.
3. [These tables are in the above omitted sections.—Ed.]
4. Compare the results surveyed in Nordhaus and Wallich (1973, table 2).
5. One could reasonably argue that the major effect of these programs comes not from the shift in relative supplies but from the increased liquidity of the secondary market for mortgages.

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International Capital Flows and Exchange Rates

(1983)

1. Introduction

Ever since the demise of the Bretton Woods system of fixed exchange rates and the advent of a managed float in 1973 there has emerged a surge of theoretical models and empirical analyses of exchange rate determination.¹ The capital flows which played a central role in the earlier models on fixed exchange parities are no longer in the prime focus. Instead, the main interest has shifted directly to the determination of exchange rates.² Nonetheless, the role of both short-term and long-term capital flows has varied substantially in the new studies. They are explicitly recognized in the "portfolio balance models" through the balance of payment equilibrium condition which is used to determine the exchange rate, but their role in the "monetary models" remains at best implicit or lies generally subsumed under the well-known price parity and interest parity assumptions.³ The purpose of this paper is to develop a simultaneous equations system of the foreign exchange market endogenizing both capital flows and exchange rates. The analysis is conducted with reference to six countries, Canada plus five other countries which constitute the latest (1981) valuation basket of *SDR* currency. These are France, Germany, Japan, the U. K. and the U. S.

Adapted, with permission, from Kanta Marwah and Lawrence R. Klein, "A Model of Foreign Exchange Markets: Endogenising Capital Flows and Exchange Rates," in Lawrence R. Klein and Wilhelm E. Krelle, eds., *Capital Flows and Exchange Rate Determination*, Supplementum 3, *Zeitschrift für Nationalökonomie* (Wien: Springer-Verlag, 1983), 61-95. Several short sections and the appendices have been deleted.

2. The Model

Assuming that the foreign exchange capital market operates efficiently without any intervention by the government and that there is no uncertainty or risk involved, a portfolio theoretic model views exchange rates as performing primarily (in the short-run with a fixed stock of assets given) an equilibrating function of balancing foreign demand for domestically issued financial assets and domestic demand for foreign assets denominated in foreign currency. In a monetary model, however, the exchange rate is principally regarded as an instrument of adjustment in the domestic money market; an explicit analysis of foreign assets is assumed away by the interest parity assumption. In this model, domestic interest is exogenously fixed in parity with the foreign rate adjusted for any expected change in the exchange rate, and the actual exchange rate is determined at a point where, via associated domestic prices in par with foreign prices, it clears the domestic money market. In addition, a monetary model predicts a unitary elasticity of exchange rate with respect to money supply. It must be mentioned that these two basic models have been further extended into several variants; some include market pressures and others treat interest rate and expectations endogenously.

Our model is neither pure portfolio nor pure monetary; it is basically a balance of payment structural model which determines explicitly both capital flows and exchange rates.⁴ It does not conform strictly to either purchasing power parity or interest rate parity assumptions; however, it does recognize both these elements. It is specifically relevant for a managed float system whose two adjacent polar regimes of fixed and flexible exchange rates become special cases. In developing the structure of our model an attempt is made to disaggregate total capital flows into nine categories by functional type and ownership; some risk and uncertainty factors have been duly recognized, and an official intervention function absorbing and mitigating partially the market pressures has been embedded in the adjustment process through which the exchange rate is finally determined.

We start with a standard specification of money market behavior of country i whose nominal money demand (pL) must be equal to its total money stock determined by m (multiplier) times its monetary base (H). The real money demand (L) is assumed to depend upon real income (Y) and interest rate (r). For the sake of simplicity we specify that H is fed by only two basic sources, net domestic assets (NDA) and net foreign assets (NFA) of the central bank.⁵ And p is the general price level. That is,

$$m_i H_i = p_i L_i(Y_i, r_i, \dots) \quad (1)$$

$$H_i = NDA_i + \varepsilon_{iSD} NFA_i \quad (2)$$

where ε_{iSD} is an exchange rate defined as national currency units (price) per *SDR*. All variables except NFA in Eqs. (1) and (2) are measured in national currency units; NFA is measured in *SDRs*.

Under a fully flexible exchange rate system with no intervention from the government sector, the stock of net foreign assets necessarily remains unchanged ($\Delta NFA = 0$), and thus the national money supply stays by and large insulated from any external disturbances appearing in the balance of payment accounts. But under a fixed exchange rate system or under a system of managed float with less than complete sterilization, the stock of foreign assets responds endogenously to balance of payment factors ($\Delta NFA \neq 0$), and the domestic money supply gets directly affected. The balance of payment factors and any change in net foreign assets are definitionally related as

$$\Delta NFA_i = CUB_i + CAB_i \quad (3)$$

where CUB and CAB , respectively, are balance of payment on current and capital accounts, and both are measured in $SDRs$. CUB is measured as a surplus on current account (exports less imports), and CAB as net inflows on capital account.

Ideally, an analysis of capital flows should be carried out in terms of portfolio shares, analogous to the trade flow analysis in terms of market share coefficients.⁶ However, eschewing this approach because of the nonavailability of consistent bilateral flow data on capital accounts, we disaggregate *net* capital inflows into $k = 9$ functional and ownership categories. These are⁷

$$CAB_i = DIN_i + PIN_i + ROL_i + DBL_i + RL_i + \\ + ROS_i + DBS_i + RS_i + ERO_i \quad (4)$$

where DIN = direct investment

PIN = portfolio investment

ROL = resident official long-term capital

DBL = deposit money banks long-term capital

RL = other long-term capital (residual)

ROS = resident official short-term capital

DBS = deposit money banks short-term capital

RS = other short-term capital (residual)

ERO = errors and omissions.

A close look at the recent data for the six countries under examination confirmed our general a priori belief that these categories are subject to separate influences; at least these are expected to have different degrees of elasticity and sensitivity coefficients with respect to portfolio substitution. Moreover, the resident official sectors, ROS and ROL , seem to play distinctively a balancing role in the existing managed float system. Presumably, to some extent, some of these categories are complementary and some are competitive with each other.

We specify a net capital inflow of category k in country i by a modified portfolio adjustment function derived from a stock allocation relationship. According to this

function a ratio of net capital stock of category k to total capital stock (net worth, wealth) depends upon a yield differential on domestic and foreign securities, their relative risks and uncertainty factors. A linear generalization of this function for net capital inflow (change in stock) can be approximated by

$$\begin{aligned} \frac{CAB_i^k}{NFA_{i-1}} = & \alpha_0 + \alpha_1 GNFA_i + \alpha_2 \frac{(\mu_{ii} - \mu_{ic})^k}{\varepsilon_{iSD}} \\ & + \alpha_3 \frac{\Delta(\mu_{ii} - \mu_{ic})^k}{\varepsilon_{iSD}} + \alpha_4 [\dot{\varepsilon}_{iSD} - (\dot{p}_i - \dot{p}_c)] \\ & + \alpha_5 \frac{CUB_i}{NFA_{i-1}} + \alpha_6 \sigma_{ic}^k + \nu_i^k \quad k = 1, 2, \dots, 9 \end{aligned} \quad (5)$$

where NFA_{i-1} = net foreign assets at the beginning of the period

$GNFA$ = rate of change in net foreign assets

μ_{ic}^k = expected competitive yield measured in i 's currency on investment by country i in foreign securities denominated in foreign currency (j) defined as

$$\mu_{ic}^k = \sum_{j \neq i} w_{ij} \mu_{ij}^k \text{ and } \sum_{j \neq i} w_{ij} = 1$$

$$w_{ij} = \frac{X_{j.} + X_{.j}}{\sum_{j \neq i} (X_{j.} + X_{.j})} \text{ are relative trade weights}$$

($X_{j.}$ = exports of j and $X_{.j}$ = imports of j)

μ_{ii} = expected yield on domestic securities as measured by rate of interest

$$\mu_{ij}^k = \begin{cases} (1 + r_j^k) \frac{\varepsilon_{fij}}{\varepsilon_{sij}} - 1 & \text{for } i \neq j \\ r_i^k & \text{for } i = j \end{cases}$$

ε_{fij} = forward exchange rate, i 's currency per unit of j 's

ε_{sij} = spot exchange rate, i 's currency per unit of j 's

r_i^k = rate of interest on country i 's security of type k

ε_{iSD} = exchange rate, i 's currency per SDR

$\dot{p}_i$ = rate of change in country i 's price level

$\dot{p}_c$ = rate of change in competitive price level, that is the price level of other countries transacting with country i , defined as $\sum_{j \neq i} w_{ij} \dot{p}_j$

σ_{ic} = some measure of relative risk

ν_i = random error.

Net foreign assets at the beginning of the period is a normalization variable intended as a relevant proxy for foreign net worth.⁸ α_1 measures approximately a scale/stock effect on capital flows of changing net worth (portfolio) size in a dynamic setting, and is generally expected to be negative, that is, a rising *GNFA* would lead to capital outflows in terms of investment in foreign securities. Alternatively, however, as we have shown in our selective survey (1982), $\alpha_1 > 0$ if the wealth effect on demand for money is stronger than on demand for foreign assets. Moreover, a growing accumulation of foreign reserves may provide a barometric measure to foreign investors of the strong economic performance of the country, enticing more capital inflows. This tendency would presumably be stronger when in addition to *GNFA* the effect of current account balance on net capital flows is also significant. The sign of α_1 would thus depend upon the relative magnitudes of opposite effects.⁹

The remaining explanatory variables in Eq. (5) are basically preference allocation variables which determine a portfolio distribution mix. An expected differential of yields between domestic and foreign securities has two built-in effects: an effect of a pure interest arbitrage transaction and a forward market speculative effect. For example,

$$\mu_{ii} - \mu_{ij} = (1 + r_i) - (1 + r_j) \frac{\varepsilon_{fij}}{\varepsilon_{sij}} = \left(r_i - r_j \frac{\varepsilon_{fij}}{\varepsilon_{sij}} \right) + \left(1 - \frac{\varepsilon_{fij}}{\varepsilon_{sij}} \right), \quad (6)$$

where the term within the first parentheses measures a covered interest arbitrage and within the second a speculative component in terms of forward premium. Presumably an investor of country i buys security of country j at an exchange rate ε_{sij} and at the same time assumes a forward contract to reconvert the value of this security at the time of maturity back in country i 's currency at exchange rate ε_{fij} . The second term, therefore, may also include some element of expectations.

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Taking an intermediate "flow-stock" view¹⁰ that some capital inflows result from "flow" decisions and some from "stock," we attempt to include both the level as well as the change in the yield differential as explanatory variables. A pure "flow" decision would constrain $\alpha_2 > 0$ and $\alpha_3 = 0$, and a "stock" decision would imply $\alpha_2 = 0$ and $\alpha_3 > 0$. In an intermediate case α_2 must be positive but α_3 could be positive or negative depending upon the speculative and dynamic interactions between the two. A high level of domestic yield must normally induce more capital inflows, but a rising yield may also bring speculative expectations with the risk that ultimately the widening gap between domestic and foreign yield would narrow after some adjustments via the forward rate (see Eq. (8) below). Such expectations and risk would be deterrent to current capital inflows and α_3 would be negative. An additional expected risk on investment in foreign securities

may be measured by a moving standard deviation of the spread between μ_{ii} and μ_{ic} variables.¹¹

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In addition to interest parity deviations, we propose to use price parity deviations of exchange rate as a measure of change in the real value of i currency. As a matter of fact, $\dot{\epsilon}_{iSD} - (\dot{p}_i - \dot{p}_c)$ can be viewed as measuring an impact of two diverse factors, a pure demand factor and an expectational factor. The former will have a negative impact and the latter a positive. As the real value of i currency depreciates with an increase in $\dot{\epsilon}_{iSD} - (\dot{p}_i - \dot{p}_c)$, its demand falls. However, as currency depreciates with a fall in its real value and the deviations of actual exchange rate from its price parity rate increase, people begin to form regressive expectations that the exchange rate would eventually (and soon) converge back to the inflation differential at home and abroad. This would bring speculative gains on the current capital inflows. Thus the sign of $\dot{\epsilon}_{iSD} - (\dot{p}_i - \dot{p}_c)$ is quite ambiguous.

And finally, current account balances are expected to have a negative impact on capital inflows. In addition to their representing the need for matching credit creation to finance trade, the standard argument is that a country would actively seek capital inflows to offset its current account deficit and would actively acquire foreign securities to spend its surplus.

Next, the formation of the forward rate can be specified in the form of a linear combination of interest parity rate and the expected spot rate.

$$\epsilon_{fij} = \lambda \left(\frac{1 + r_i}{1 + r_j} \right) \epsilon_{sij} + (1 - \lambda) \epsilon_{sij}^e \quad j = 1, 2, \dots, 5 \quad (8)$$

An expected spot rate may simply be determined by some distributed lag scheme of expectation formation such as

$$\epsilon_{sij}^e = E(\epsilon_{sij-1}, \epsilon_{sij-2}, \dots, \dot{\epsilon}_{sij} - (\dot{p}_i - \dot{p}_j)). \quad (9)$$

As a first approximation, however, we suppress Eqs. (8) and (9) and use the forward rate as a predetermined variable. This brings us to the determination of the actual exchange rate.

Aggregating k behavioral components of capital inflows, we obtain an estimate of CAB as specified in Eq. (4), and through the balance of payment identity in Eq. (3), we determine the change in net foreign assets, ΔNFA . CUB is assumed to be known exogenously, given by *LINK* system solutions.

Under a fully flexible exchange rate system, ΔNFA is expected to be zero for the foreign exchange market to be in equilibrium, and thus the balance of payment identity, reduced to $CUB = -CAB$, determines the equilibrium exchange rate. It virtually involves inverting the capital flow equations. In other words, an equilibrium exchange rate is determined at a point where foreign demand for

home currency generated by balance on current account (CUB) is equal to its total supply generated by an outflow of capital ($-CAB$).

In the case of a managed float, however, the market is only partially cleared through the adjustments in the exchange rate. Part of the market pressures are absorbed by government interventions as measured by the movements of net foreign assets. By accumulating (decumulating) foreign assets, government creates forced demand (supply) for foreign currency, preventing its oversupply (excess demand) in the exchange market. Thus, $\Delta NFA > 0$ implies government intervention against excessive appreciation of domestic currency and $\Delta NFA < 0$ implies deterring its depreciation. We therefore propose to determine actual exchange rates through a modified market clearing equation in the form of potential market pressures in which $(\dot{\epsilon}_{iSD} - GNFA)$ appears as a dependent variable. We may call it the potential rate of change in the exchange rate variable, $\dot{\epsilon}_{iSD}^P$; that is, the rate of change which would have taken place (and would exist) in the absence of any government intervention.¹²

We hypothesize that a potential change in the exchange rate is a joint function of interest parity and price parity variables interacting with speculative factors and a resident official sector. The resident official sector, in fact, provides a balancing force to the balance of payments accounts. The covered interest spread and the resident official sector are expected to dampen exchange market pressures and inflation spread to reinforce them. The potential exchange rate relationship may be specified as

$$(\dot{\epsilon}_{iSD} - GNFA_i) = \beta_0 + \beta_1(\mu_{ii} - \mu_{ic}) + \beta_2(\dot{p}_i - \dot{p}_c) + \beta_3ROL_i + \beta_4ROS_i + \beta_5ERO_i + w_i \quad (10)$$

where w_i is a random error. A priori β_1 , β_3 , β_4 and β_5 are expected to be < 0 , $\beta_2 > 0$.

Eq. (10) is quite general and is applicable, by and large, in all the three regimes—fixed, flexible, and managed float. Under a fixed exchange rate system where $\dot{\epsilon}_{iSD} = 0$, $GNFA$ performs an equilibrating function, determining the domestic inflation rate in the process. Alternatively, this equation may then be viewed as a truncated reduced form equation derived from the balance of payment identity. Under a flexible exchange rate system $GNFA = 0$ and $\dot{\epsilon}_{iSD}$ performs an equilibrating function. Finally, under a system of managed float, the adjustment process is partly reflected in the net flow of international reserves and partly in the movements of exchange rates.

The model contains 16 equations (1)–(4), $k = 9$ of type (5), (8)–(10), of which 13 equations are structural and 3 are identities, and determines 16 unknowns (r , H , ΔNFA , CAB , CAB^k ($k = 9$), ϵ_{fij} , ϵ_{sij}^e and ϵ_{iSD}) and thus constitutes a complete system. It must, however, be mentioned here that implicit in the system are 15 identities in the form of bridge equations linking ϵ_{iSD} to the cross rates ϵ_{sij} . For example, $\epsilon_{sij} = \frac{\epsilon_{iSD}}{\epsilon_{jSD}}$ for $i \neq j$.

As a first approximation to the statistical estimate of the model presented in the next section we assume that the interest rate and forward rate are exogenously known, and the remaining system, reduced to 12 equations—(3), (4), $k = 9$ of type (5) and (10), of which ten are structural and two are identities—determines simultaneously capital flows and the exchange rate.

3. Statistical Estimates

Our sample consists of 1972–79 annual data pooled across six countries, five *SDR* countries plus Canada. The *SDR* countries are the five *IMF* member countries having the largest exports of goods and services for the period 1975–79 and whose currencies are included in the latest *SDR* valuation basket beginning January 1, 1981. These five countries are France, Germany, Japan, the U. K., and the U. S. Our basic data sources are the *IMF Balance of Payment Year Book* (primarily for capital flows and related items) and *International Financial Statistics*. Our balance of payment identity is maintained in such a way that each capital flow component is all-inclusive of exceptional financing, and liabilities constituting foreign authorities' reserves. The definition of the variables (with *BOP* and *IFS* code wherever relevant) are listed below:

Definitions of Variables and Data

Capital Flows and Related Variables

<i>CAB</i>	= capital account balance ($9. . \times 4$ plus $.A. \times 4$), millions of <i>SDRs</i> .
<i>CUB</i>	= current account balance ($.A. .C 4$), millions of <i>SDRs</i> .
<i>DBL</i>	= deposit money banks long-term capital flow (5.1×4), millions of <i>SDRs</i> .
<i>DBS</i>	= deposit money banks short-term capital flow (5.2×4), millions of <i>SDRs</i> .
<i>DIN</i>	= direct investment ($3. . \times 4$), millions of <i>SDRs</i> .
<i>ERO</i>	= errors and omissions (in <i>CAB</i>) ($.A. \times 4$), millions of <i>SDRs</i> .
<i>NFA</i>	= total international reserves (gold + holding of <i>SDRs</i> + reserve position in the Fund + foreign exchange reserves, including counterpart items such as monetization/demonetization and valuation adjustment) ($1. .s$), end of the period, millions of <i>SDRs</i> .
<i>NFA</i> ₋₁	= total international reserves at the beginning of the period.
<i>PIN</i>	= portfolio investment (6.1×4), millions of <i>SDRs</i> .
<i>ROL</i>	= resident official long-term capital flow (4.1×4), millions of <i>SDRs</i> .
<i>ROS</i>	= resident official short-term capital flow (4.2×4), millions of <i>SDRs</i> .
<i>RL</i>	= other long-term capital flow (8.1×4), millions of <i>SDRs</i> .
<i>RS</i>	= other short-term capital flow (8.2×4), millions of <i>SDRs</i> .
<i>CI</i>	= counterpart items ($2 . . . C 4$), millions of <i>SDRs</i> .

Exchange Rate, Interest Rate, Yield and Prices

ε_{fij} = 3 months forward exchange rate, units of i currency per unit of j , end of the period.

ε_{sij} = spot exchange rate, units of i currency per unit of j , end of the period.

ε_{iSD} = units of i currency per SDR , end of the period.

p_i = index of unit value of exports of country i in national currency, 1975 = 1.00 (# 74).

p_c = trade weighted competitive price index, $\sum_{j \neq i} w_{ij} p_j$.

r^s = short-term interest rate (60 C), % p. a., period average.

r^l = long-term interest rate (61), % p. a., period average.

μ_{ij} = % expected yield to investor of country i measured in i 's currency on investment denominated in currency j , computed as

$$= \begin{cases} (100 + r_j) \frac{\varepsilon_{fij}}{\varepsilon_{sij}} - 100 & \text{for } i \neq j \\ r_i & \text{for } i = j \end{cases}$$

$$\mu_i = \mu_{ii}$$

μ_{ic} = % expected competitive yield to investor of country i measured in i currency on foreign investment, computed as $\sum_{j \neq i} w_{ij} \mu_{ij}$,

w_{ij} are 1975 trade weights.

$$\mu_c = \mu_{ic}$$

$$\mu_d = \mu_{ii} - \mu_{ic}$$

$$\mu_d HF = \left(r_i - \sum_{j \neq i} w_{ij} r_j \frac{\varepsilon_{fij}}{\varepsilon_{sij}} \right)$$

$$\mu_d S = 100 \left(1 - \sum_{j \neq i} w_{ij} \frac{\varepsilon_{fij}}{\varepsilon_{sij}} \right)$$

$$\mu_d HS = (100 + r_i) \sum_{j \neq i} w_{ij} \left[1 - \frac{\varepsilon_{fij}}{\varepsilon_{sij}} \right]$$

$$\mu_d HFS = \sum_{j \neq i} w_{ij} (r_i - r_j) \frac{\varepsilon_{fij}}{\varepsilon_{sij}}.$$

Note: An attached letter l denotes long term, computed by using the long-term interest rate, and s denotes short term, computed by using the short-term interest rate. The interest rate values are period averages because this is the way the data are most readily available. The exchange rates, on the other hand, are entered as end-of-period values, also readily available in that form.

Other Variables

- D_i = dummy variable with value 1 for country i and zero for others,
 i = Canada (C), France (F), Germany (G), Japan (J), U. K.,
 and U. S.
- $GNFA$ = rate of change in net foreign assets (international reserves).
- σ = 4-quarter moving standard deviation of yield spread ($\mu_{ii} - \mu_{ic}$)
 or associated component, (moving quarters $t - 0$ to $t - 3$).
- $\dot{}$ = dot above the variables is rate of change.
- Δ = change from the preceding period.

[*Note:* An omitted section describes experiments conducted by the authors to determine which of the empirical specifications for the expected competitive yield variable would give the best results. On this basis the specification μdHS was selected for the parameter estimates in the model.—Ed.]

The best estimates obtained by ordinary least squares and Aitken's generalized least squares are presented below. The generalized least squares estimates are obtained because the pooling of cross-section and time series data may make the random error cross-sectionally heteroskedastic and time-wise autoregressive.¹³ The sample size is 48, eight annual observations (1972–79) for six countries. The numbers in parentheses below the coefficients are t -ratios.

Ordinary Least Square Estimates

Direct Investment

$$\begin{aligned} \frac{DIN}{NFA_{-1}} = & -0.078 - 0.0521 GNFA + 0.0563 \frac{l\mu dHS}{\epsilon_{iSD}} \quad (S.1) \\ & (2.28) \quad (2.77) \quad (3.62) \\ & -0.2262 [\dot{\epsilon}_{iSD} - (\dot{p}_i - \dot{p}_c)] - 0.0049 \frac{\sigma l}{l\mu dHS} \\ & (1.12) \quad (0.778) \\ & + 0.1155 D_F + 0.0373 D_G - 0.0153 (D_J + D_{U.K.}) \\ & (2.34) \quad (0.77) \quad (0.32) \\ & - 0.4676 D_{U.S.} \\ & (9.62) \end{aligned} \quad \bar{R}^2 = 0.84$$

Portfolio Investment

$$\begin{aligned}
\frac{PIN}{NFA_{-1}} = & \frac{0.5150}{(7.52)} + \frac{0.3264}{(5.44)} GNFA + \frac{0.0190}{(0.33)} \frac{s\mu dHS}{\varepsilon_{iSD}} \quad (S.2) \\
& - \frac{0.147}{(1.58)} \frac{\Delta s\mu dHS}{\varepsilon_{iSD}} - \frac{0.4305}{(4.9)} \frac{CUB}{NFA_{-1}} \\
& - \frac{0.1740}{(2.07)} \sigma s - \frac{0.5085}{(4.82)} D_F - \frac{0.3719}{(4.16)} (D_G + D_J + D_{U.K.}) \\
& \bar{R}^2 = 0.75
\end{aligned}$$

Resident Official Long-Term

$$\begin{aligned}
\frac{ROL}{NFA_{-1}} = & - \frac{0.04796}{(4.06)} + \frac{0.03214}{(2.52)} GNFA + \frac{0.0603}{(4.00)} \frac{\Delta l\mu dHS}{\varepsilon_{iSD}} \quad (S.3) \\
& + \frac{0.0379}{(2.06)} \sigma l + \frac{0.1171}{(3.46)} \frac{DIN}{NFA_{-1}} \\
& - \frac{0.0442}{(2.19)} D_J + \frac{0.1129}{(4.51)} D_{U.K.} \\
& \bar{R}^2 = 0.77
\end{aligned}$$

Deposit Money Banks Long-Term

$$\begin{aligned}
\frac{DBL}{NFA_{-1}} = & - \frac{0.01415}{(0.661)} + \frac{0.0461}{(1.33)} \frac{l\mu dHS}{\varepsilon_{iSD}} - \frac{0.0875}{(3.40)} \frac{\Delta l\mu dHS}{\varepsilon_{iSD}} \quad (S.4) \\
& - \frac{0.044}{(1.56)} \frac{CUB}{NFA_{-1}} - \frac{0.0092}{(0.32)} \sigma l - \frac{0.2257}{(6.71)} D_F \\
& - \frac{0.10699}{(1.297)} D_{U.K.} - \frac{0.0463}{(1.37)} D_{U.S.} \\
& \bar{R}^2 = 0.66
\end{aligned}$$

Other Long-Term

$$\begin{aligned}
\frac{RL}{NFA_{-1}} = & \frac{0.00647}{(0.44)} + \frac{0.1238}{(7.4)} GNFA + \frac{0.12006}{(6.01)} \frac{\Delta l\mu dHS}{\varepsilon_{iSD}} \quad (S.5) \\
& - \frac{0.0884}{(4.23)} \frac{CUB}{NFA_{-1}} - \frac{0.0663}{(2.77)} \sigma l - \frac{0.2941}{(3.55)} \frac{DBL}{NFA_{-1}} \\
& - \frac{0.03117}{(1.14)} D_J + \frac{0.2789}{(8.17)} D_{U.K.} \\
& \bar{R}^2 = 0.945
\end{aligned}$$

Resident Official Short-Term

$$\begin{aligned}
\frac{ROS}{NFA_{-1}} = & -0.0295 + 0.1907 \frac{GNFA}{(0.67) \quad (3.79)} + 0.1291 \frac{s\mu dHS}{(1.57) \quad \varepsilon_{iSD}} \quad (S.6) \\
& - 0.1844 \frac{\Delta s\mu dHS}{(2.09) \quad \varepsilon_{iSD}} - 0.3376 \frac{CUB}{(4.42) \quad NFA_{-1}} \\
& - 0.5083 \frac{DBS}{(4.77) \quad NFA_{-1}} + 0.1483 \frac{D_J}{(1.76)} + 0.1816 \frac{D_{U.K.}}{(1.06)} \\
& + 0.1115 \frac{D_{U.S.}}{(1.38)} \quad \bar{R}^2 = 0.50
\end{aligned}$$

Deposit Money Banks Short-Term

$$\begin{aligned}
\frac{DBS}{NFA_{-1}} = & -0.0415 + 0.2183 \frac{GNFA}{(0.92) \quad (6.34)} - 0.4000 \frac{CUB}{(5.76) \quad NFA_{-1}} \quad (S.7) \\
& + 0.1561 \frac{\sigma_s}{(2.15)} - 0.7096 \frac{ROS}{(5.59) \quad NFA_{-1}} + 0.1007 \frac{D_J}{(1.13)} \quad \bar{R}^2 = 0.72
\end{aligned}$$

Other Short-Term

$$\begin{aligned}
\frac{RS}{NFA_{-1}} = & -0.0347 + 0.0272 \frac{\sigma_s}{(0.78)} + 0.0198 \frac{DBS}{(0.48) \quad NFA_{-1}} \quad (S.8) \\
& + 0.1055 \frac{D_F}{(2.63)} + 0.0121 \frac{D_G}{(0.30)} + 0.0558 \frac{D_J}{(1.34)} \quad \bar{R}^2 = 0.18
\end{aligned}$$

Error and Omissions

$$\begin{aligned}
\frac{ERO}{NFA_{-1}} = & -0.4826 + 0.3865 \frac{GNFA}{(4.54) \quad (5.44)} + 0.0994 \frac{\Delta l\mu dHS}{(1.15) \quad \varepsilon_{iSD}} \quad (S.9) \\
& - 1.536 \frac{ROL}{(1.89) \quad NFA_{-1}} - 0.4939 \frac{DIN}{(1.22) \quad NFA_{-1}} + 0.6674 \frac{D_F}{(4.80)} \\
& + 0.4029 \frac{D_G}{(3.01)} + 0.2892 \frac{D_J}{(2.23)} + 0.6174 \frac{D_{U.K.}}{(4.80)} \\
& + 0.3419 \frac{D_{U.S.}}{(1.50)} \quad \bar{R}^2 = 0.765
\end{aligned}$$

Capital Account Balance

$$CAB = DIN + PIN + ROL + DBL + RL + ROS + DBS + RS + ERO \quad (S.10)$$

Foreign Reserves

$$\Delta NFA = CUB + CAB + CI \quad (S.11)$$

Exchange Rate/Market Adjustment

$$\begin{aligned}
 (\dot{\epsilon}_{iSD} - GNFA) = & -1.293 - 0.0925 \frac{l\mu dHS}{\epsilon_{iSD}} \quad (S.12) \\
 & \frac{(1.39)}{(1.52)} \\
 & + 3.0535 (\dot{p}_i - \dot{p}_c) - 2.627 \frac{ROL}{NFA_{-1}} \\
 & \frac{(2.63)}{(2.44)} \\
 & - 1.952 \frac{RL}{NFA_{-1}} - 0.6495 \frac{ERO}{NFA_{-1}} \\
 & \frac{(3.67)}{(3.54)} \\
 & \bar{R}^2 = 0.81
 \end{aligned}$$

.

Next, reviewing the highlights of the estimates of the whole model, we find that in the statistical equation (S.1) for direct investment the signs of all the structural coefficients are as expected a priori. The long-term adjustment in terms of the stock allocation effect of growing foreign reserves is quite significant. Direct investment, which is presumably dominated by long-term investment, is quite sensitive to the long-term yield differential component. The exchange rate deviations from the price parity rate act more like a demand variable. The risk associated with the increasing yield spread component is a deterrent (though weak) to capital inflows. Dummy variables for France and the U. S. account for important shift effects. The other dummy variables have statistically insignificant coefficients and yet make important contributions to the overall stability of the relationship.

There was some evidence that direct investment complements the resident official long-term sector, but because of the high degree of correlation between *GNFA* and *ROL*, the use of both variables in Eq. (S.1) was abandoned.

Portfolio investment proved to be somewhat more sensitive to the short-term yield than to the long-term. The change in yield differential component has a somewhat more significant effect than its level. Growth of foreign assets and the

payment balances on current account are the most significant structural variables and account for practically 40 percent of the total variation in portfolio investment. Growth of net foreign assets is indicative more of the state of the economy providing inducement for portfolio inflows. Current balances get significantly transformed into foreign securities. Some country differences also produce important shifts in the portfolio investment.

The resident official long-term capital flows are evidently (Eq. (S.3)) subject to the "stock" decision; the change in yield differential component measures about 26 percent of the total variation. Growing foreign assets are again indicative of a healthy economy as far as the official sector is concerned. And as has already been mentioned above, this sector strongly complements direct investment. Surprisingly, the resident official sector does not seem to be a risk averter. The coefficient of moving standard deviation of yield variable is positive and statistically significant.

Eq. (S.4) shows that deposit money banks long-term capital inflows are affected both by "stock" and "flow" decisions; the "stock" decision is more significant. The coefficient of risk variable is statistically insignificant. The current balances continue to indicate a matching credit creation in a significant way.

Eq. (S.5) for other long-term capital flows gives the best result. The stock shift portfolio substitution effect of the yield differential component is extremely significant. The risk variable as expected a priori has a strong impact. The movements of other long-term capital flows seem to be inversely related to the deposit money banks flows.

To summarize, resident official long-term flows and other long-term flows are quite sensitive to changes in the yield component; the "stock" decisions are evidently more relevant. The growth of foreign assets seems to provide a measure of the strength of the economy. Risk and current balances turn out to be most significant in other capital flows. The resident official sector complements direct investment, but the other long-term flows compete with deposit money banks' long-term capital.

Eqs. (S.6) to (S.8) for short-term flows are somewhat weaker than the equations for the corresponding long-term flows. Growth of net foreign assets is significant in the short-term resident official sector and deposit money banks; in both cases it has positive effect. Deposit money banks are risk takers for short-term flows, as the resident official sector appears to be for long-term flows. Short-term flows, in general, seem to be more sensitive, as measured by the relative magnitude of their coefficients, to current balances than are long-term flows. The resident official sector seems to provide a balancing edge to the deposit money bank flows. There seems to be a great deal of noise and volatility in the movements of other short-term flows; Eq. (S.8) is still quite weak.

Eq. (S.9) for capital flow items listed as errors and omissions is basically an allocation equation by type of flows and by countries. In addition to the stock effect of change in yield component and growth effect of foreign assets, the resident

official long-term sector (*ROL*) seems to account for the largest portion of error. Similarly, net capital flows of the U. K. seem to make the largest contribution towards error, followed successively by Germany and the U. S.

A brief review of our preliminary results presented above clearly proves that a disaggregation of capital flows is a promising route to follow. Substantial differences seem to exist in the sensitivity of various categories of capital flows as measured primarily by the relative magnitude of their marginal coefficients, and also by the direction of their responses.

This brings us to the final equation (S.12) which measures the adjustment behavior of foreign exchange market and determines the exchange rate. Some of its features are quite noteworthy. Nearly all its structural coefficients are statistically significant and have a priori consistent signs. The equation fares quite well when compared to exchange rate estimates reported in some recent studies.¹⁴ Its two most important highlights are: first, by and large, exchange rate gyrations are basically determined by long-term flows. The resident official sector in conjunction with other long-term flows and errors and omissions—which themselves are subject to long-term variables, as is evident in Eq. (S.9)—play an important role in affecting these gyrations. Second, the coefficient of spread between domestic and foreign inflation rates is not close to unity. The equation seems to indicate that even if foreign exchange markets operated perfectly and efficiently, unencumbered by resident official flows and without any disruptions due to unaccounted errors and omissions such that $GNFA = 0$, the movements of a fully flexible exchange rate will somewhat overshoot the path of a differential in inflation rates at home and abroad. Any inherent tendency for the purchasing power parity relation to hold seems to get obstructed in the short run by the speculative activity in the forward market.¹⁵

Parenthetically, we may also add that although Eq. (S.12) has no seeming resemblance to the exchange rate relationship derived from the monetary model, it does implicitly incorporate an effect of any change in money supply caused by the growth of foreign reserves. The growth of foreign reserves, as we have already seen in Eq. (1), unless sterilized, would affect the monetary base, money supply, and finally the interest rate.

We may close the discussion of statistical estimates by saying that our equation-by-equation preliminary results seem to be quite promising. However, the final test would be to see how the model as a whole tracks the past data and helps in future predictions. We need to see how it functions as a simultaneous system and, eventually, how it fits into the *LINK* model.¹⁶

4. A Simulation Test

The model was simulated block by block separately for each country for the 1973–79 sample period, and postsample predictions were obtained for 1980. In solving the model, the yield variable μdHS was assumed to be exogenously known. Moreover,

Table 30.1

Actual and Estimated Values of ϵ /SP Exchange Rates, National Currency Units per SDR

	Canada (c\$)			France (franc)			Germany (D Mark)		
	Actual	Estimated	% Error	Actual	Estimated	% Error	Actual	Estimated	% Error
1973	1.201	1.148	4.6	5.679	5.680	-0.2	3.261	3.006	8.5
1974	1.214	1.203	0.9	5.442	5.054	7.7	2.950	2.249	31.2
1975	1.190	1.223	-2.7	5.251	5.424	-3.2	3.070	2.524	21.6
1976	1.172	1.383	-15.26	5.774	5.305	8.8	2.745	2.750	-0.18
1977	1.329	1.284	3.5	5.715	5.895	-3.05	2.557	2.767	-7.6
1978	1.545	1.551	-0.4	5.446	5.227	4.2	2.381	2.745	-13.3
1979	1.540	1.576	-2.3	5.296	5.236	1.15	2.228	2.422	-8.0
1980 P	1.524	1.587	-3.8	5.760	5.826	-1.13	2.498	2.271	10.0

	Japan (Yen)			U. K. (£)			U. S. (\$)		
	Actual	Estimated	% Error	Actual	Estimated	% Error	Actual	Estimated	% Error
1973	337.78	313.07	7.9	0.5193	0.5142	0.99	1.206	1.377	-12.4
1974	368.47	394.06	-6.5	0.5213	0.6933	-24.8	1.224	1.015	20.6
1975	357.23	368.51	-3.06	0.5785	0.3116	85.6	1.171	1.397	-16.2
1976	340.18	319.73	6.4	0.6285	0.5579	12.6	1.162	1.084	7.2
1977	291.53	300.61	-3.0	0.6373	1.0084	-36.8	1.215	1.219	-0.3
1978	253.52	252.09	0.56	0.6403	0.3804	68.3	1.303	1.442	-9.6
1979	315.76	297.01	6.3	0.5923	0.6297	-5.9	1.317	1.322	-0.38
1980 P	258.91	291.05	-11.0	0.5348	0.5817	-8.1	1.275	1.275	0

P: Post-sample predictions.

except for the U. K. model, total capital flows were also fixed exogenously at their actual values, and the error and omission component was determined as a residual through the aggregate capital flow identity. Consequently the structural equation (S.9) was suppressed in these models. For the U. K. model, however, both *ERO* and total capital flows were endogenously determined as specified in the basic model structure.

The final solution for the exchange rate ε_{iSD} for each country has been presented in Table 30.1. These solutions show that the performance of the system in tracking the actual exchange rate is reasonably well except in the case of the U. K. for the earlier years. However, in the initial solutions the system was found to be particularly volatile for 1973 and 1975. If once it got away from the track, large errors in the predictions for subsequent years were observed. Therefore, occasionally some degree of "add factoring" became necessary to prevent the occurrence of a runaway solution or to make the system converge. The primary reason behind such adjustments was that large revisions in the data had taken place since our initial estimates. These revisions were far from systematic. To accommodate these revisions in simulations, some adjustment factors (*AF*) were added to the estimated equations. These factors wherever utilized have been shown in the Appendix Table 1 which summarizes the assumptions underlying our simulations.¹⁷

Based on our a priori judgment and empirical testing, we may conclude our analysis by saying that our experiment with the structural approach through disaggregated capital flows has been quite useful and revealing. It seems to provide a promising venue for predicting the exchange rate, especially in the short run, but we shall have to improve our ability to explain capital flows in order to determine exchange rate movements. This paper is only the start of a lengthy research process.

Notes

1. Some useful reference sources are: Leamer and Stern (1970), Whitman (1975), Officer (1976), Schadler (1977), Black (1977), Kreinin and Officer (1978), Isard (1978), Helliwell (1979), Hacche and Townend (1981a), and the symposium on purchasing power parity in the *Journal of International Economics* (May 1978).

2. There have been several studies earlier on the movements of capital flows per se. To quote a few: Branson (1968, 1970), Genberg (1976), Kouri and Porter (1974), Kouri (1975), and Lybeck, Häggström, and Järnhäll (1979); other references are in Bryant (1975) and Magee (1976). However, these studies have mostly incorporated fixed exchange rate regimes, or have treated exchange rates as exogenously determined variables. There are some notable exceptions, especially in the context of national econometric models, e.g., Rhomberg (1964) and Officer (1968). More recently there have been Krelle et al. (1979), Ball and Burns (1979), Lybeck and Järnhäll (1979), and Amano et al. (1981).

3. We have reviewed these models in our previous paper (1982).

4. For the detailed framework and theoretical underpinnings, we refer to our background paper (1982).

5. To be more precise, the money multiplier m should be treated as a variable which would normally depend upon a variety of factors such as a spread between interest rate and discount rate, legally required reserve ratio, risk and uncertainty factors, and deviations of actual rate from the target rate. It may also be noted that we assume nonunitary money multiplier ($m > 1$), but for the sake of simplicity we are assuming a unitary density of money supply (Marwah 1979), that is, the monetary institutions hold zero excess reserves. It is also worthy of note that most of the earlier studies related to foreign exchange market make the restrictive assumption that $m = 1$.

6. A case study of bilateral flows is a subject of another paper: Marwah, Klein, and Bodkin (1983).

7. With an exception of direct and portfolio investment these categories can be easily reclassified into short-term and long-term flows, and private and public flows.

8. In some experiments made in Project LINK, initial reserves have proved to provide a good normalizing base. Net foreign assets in this paper are defined broadly as total international reserves.

9. It may be noted that in the portfolio models of capital flows, an increase in domestic wealth leads directly to capital outflows, but in the monetary models this effect is quite ambiguous. Using *GNP* as a proxy for wealth, Lybeck, Häggström, and Järnhäll (1979) found mixed results on this count.

10. See, for instance, Branson (1970).

11. There are presumably a number of additional risks such as imposition of exchange controls, the possibility that a foreign security will have to be sold before maturity to finance a domestic transaction or for alternative investment.

12. This variable is quite similar but not exactly equal to the variable used by Girton and Roper (1977). Our equation, on the whole, is different. Thus, Hacche's and Townend's (1981b) critique of Girton's and Roper's direction is not applicable to our equation. We have, in fact, questioned the restrictiveness of some of Girton's and Roper's assumptions in an early version of a related paper (1982, 16, fn. 16).

13. The generalized least squares estimates have been deleted.—Ed.

14. See, for example, Hacche and Townend (1981a) and Klein, Fardoust, and Filatov (1981).

15. It may be mentioned that our exchange rate equation (S.12) was re-estimated without the unitary constraint on the *GNFA* variable. A number of alternative values were selected for this coefficient from a range of values from 0.75 to 2.5 in small steps. But the *GNFA* variable with unitary coefficient yielded the most meaningful results.

16. It may be noted that our system may appear unstable, as the sum of the coefficients of *GNFA* in our structural equations exceeds unity (*OLS*: 1.226, *GLS*: 1.0998). However, in any stability analysis one would have to include all the chain effects as well. For example, in our Eq. (S.3) for *ROL*, in addition to the positive coefficient of *GNFA* (0.0321), we have a negative chain component, $\frac{\partial ROL}{\partial DIN} \frac{\partial DIN}{\partial GNFA} = -0.0061$. Altogether there are six such components in the capital flow equations. Some of these components are negative and some are positive. Adding these components to direct coefficients we get a new sum which is less than unity, *OLS*: 0.954, and *GLS*: 0.921.

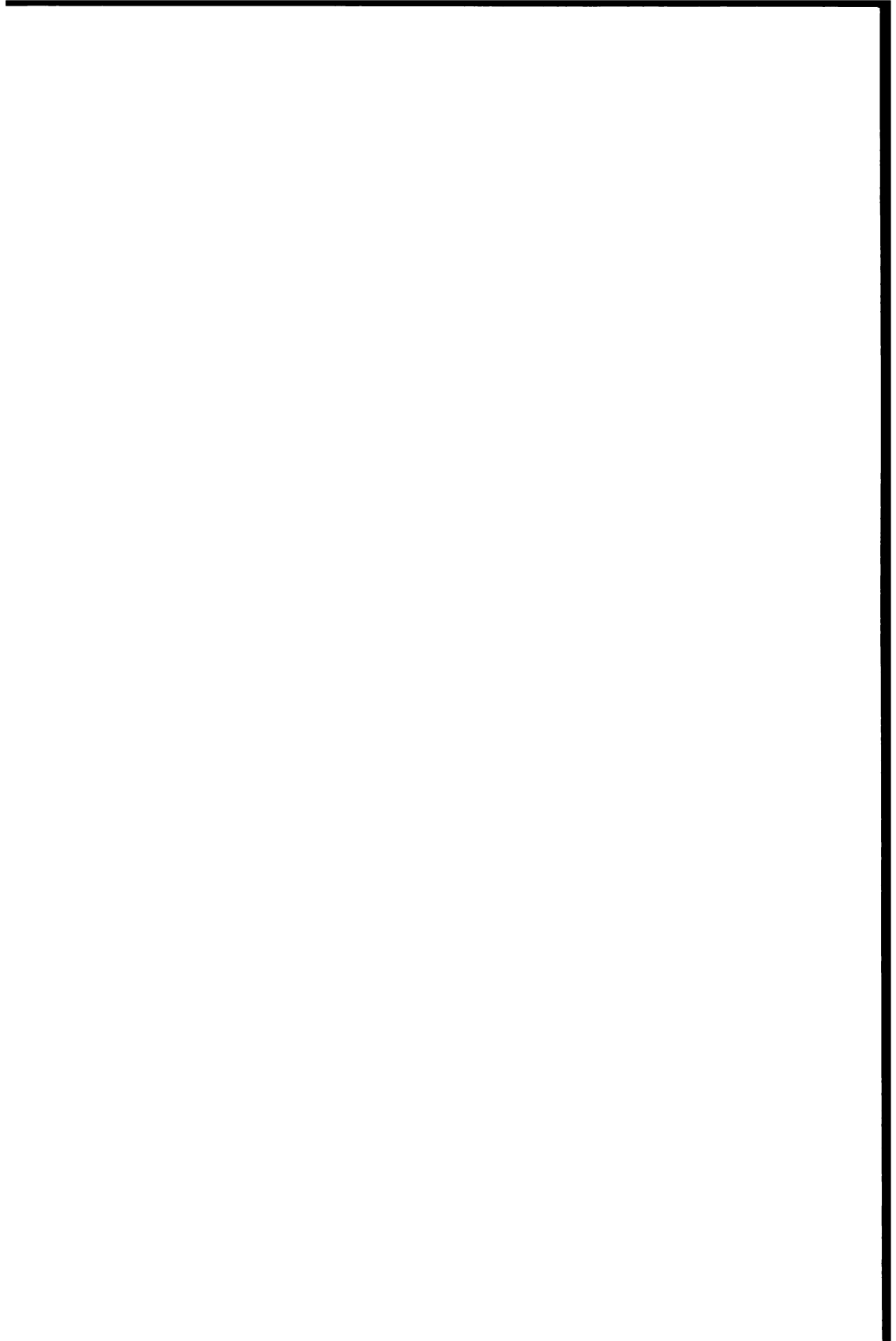
17. Appendix Table 1 has been deleted.—Ed.

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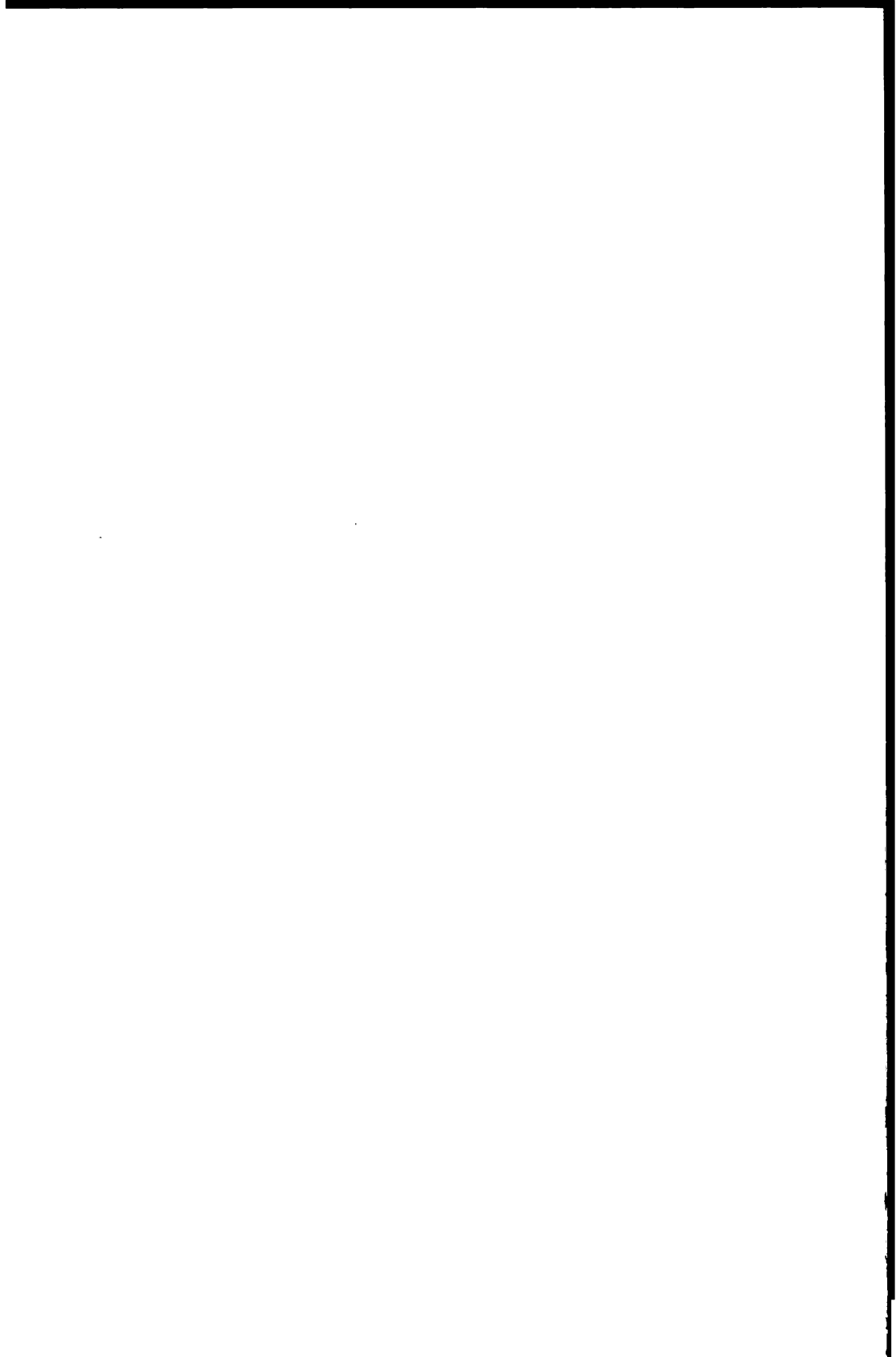
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Part VII

Uses of the Accounts in Historical Data Analysis



Introduction to Part VII

Years ago among economic statisticians at the Federal Reserve the expression “making the numbers talk” was often heard. It reflected their understanding that economic data do not speak for themselves. One has to make them tell their story. This process of giving meaning to economic time series I call historical data analysis.

The problem is that a given set of data contains not just one story but many. Which story gets drawn out depends on the economic historian. It depends, for example, on the historian’s interests, factual knowledge, conceptual predispositions, and on what questions the historian puts to the data. Clearly, objectivity—achieving general agreement in regard to what is significant—is not likely to come easily. Historical data analysis may seem simple, but it is not.

Nevertheless, it is a critically important type of analysis despite its current academic neglect. First and foremost it is a prime method for absorbing the facts of the world—in our case, financial system data. It is a way to become “well informed.” Secondly, it is a key technique for identifying the crude correlations that can be clues to causal relationships. It helps us avoid total dependence on theory and doctrine in developing hypotheses. Broadly, historical data analysis builds our knowledge of what, as economists, we would like to explain.

The location of these readings between the groups on model analysis and policy analysis is not accidental. On the one hand, historical analysis complements model analysis by presenting institutional and behavioral materials that are relevant to structural design and to structural change in models. It can help improve financial models and help keep them up to date. On the other hand, as historical data analysis moves toward the present and as it focuses on the proper functioning of the economy, it merges with current policy analysis. The techniques of these two kinds of analysis are very similar. The policy analyst needs to be aware of major influences in the current situation, and recent historical analysis can help.

The central question for the financial historian would seem to be this: How do I determine which financial facts are of significance? Applying the flow-of-funds accounts to financial history prejudices this question. The significance of these data is preasserted. But beyond the organizing that is implicit in the accounts,

there seems to be little methodological guidance. However, as we shall see, a variety of additional organizing devices are used by our authors, devices that help them judge data significance. In briefly considering here the selections of Part VII, we will try to identify these devices.

A remarkable aspect of reading 31 by Morris Copeland is the journey back to the era before social accounting and back to the fear of high interest rates that Secretary of the Treasury McAdoo believed would result from government borrowing during World War I. Copeland's counterargument, based on the increased supply of funds that would necessarily parallel the government's increased demand, is derived simply from a basic understanding of how the flow-of-funds accounts are put together. And the same goes for his case that the banking sector functions as an intermediary and not an ultimate financier of aggregate demand. Merely being familiar with the structure of the financial accounts—and thinking in those terms—pointed up the significance of certain of the financial facts.

In my own early paper, reading 32, there are two organizing devices in addition to the accounting system itself. The first is the saving-investment process scheme that was laid out in reading 10. This is the main fact-selecting device. Then imposed upon this scheme is an exploratory hypothesis—the view that ultimate borrowing generally determines ultimate lending. This hypothesis not only provides additional organization but also helps give life to the facts; it draws out a story. Of course, the saving-investment process is much neater when applied to the U.S. financial system of the 1950s than when it is applied to the institutionally more elaborate system of today. On the other hand, many developing countries have systems for which this simple scheme is quite a good fit.

Like nonfinancial markets, many financial markets are characterized by both flows of funds and prices (yields). It thus seems natural to examine the historical relation between the two—the major theme of reading 33, from the *Federal Reserve Bulletin*. With supply and demand theory in mind we expect a positive correlation of flow volumes and interest rates to result from variation in the demand for funds and an inverse correlation to be due to variation in supply. The actual history of the 1960s is a good bit more complex, as the reading demonstrates.

Reading 34, by Benjamin Friedman, is one portion of a major survey of post-war changes in American financial markets that makes extensive use of the flow-of-funds data. Its first section develops the economy's increased reliance on private debt financing over the 1946–78 period. The next section (the part included here) shows how the financial system has during this period increasingly relied on financial intermediaries to hold the growing debt issued by nonfinancial borrowers. The remaining (omitted) section deals with the changing financial role of the federal government. We recognize as a background framework for the analysis the saving-investment process. Another important data selecting device is illustrated here by the design and use of an integrated set of tables and charts.

A macroeconomic model builder who thinks about economic history is apt to wonder how or whether events have changed the structure of his or her model—that is, shifted or altered its basic behavior equations. The model builder has to ask which historical events might make these changes, a unique point of view for developing a historical analysis. This is what Benjamin Friedman does in reading 35. In a historical analysis of the 1964–88 period, he presents the events that he judges might bear on the equations in the FRB-MPS model that are closely related to monetary policy. He then refits the relevant equations and carries out simulations to see if the new fits make the model respond differently to monetary policy change. His point of view makes for a most incisive historical treatment of his three areas of focus: the financing of residential construction, the increased openness of the economy, and the rise of business indebtedness in the 1980s.

A final method of organization is illustrated by reading 36. This piece is organized around a major historical event—the European currency crisis of 1992. Here capital flow data are used to support the existence of a particular set of expectations regarding the path of exchange rates on the way toward the European Monetary Union. Apparently a major shift in these expectations—*influenced importantly by political events*—brings on the crisis. Our understanding of these events is very much aided by the initial background description of present-day institutional arrangements in international investment markets.



MORRIS A. COPELAND

How World War II Was Financed

(1962)

It is not easy for us today to imagine what it must have been like to try to understand the workings of our economy in the absence of social accounting information. The workings of those aspects that involve financial transactions seem to have been particularly difficult to understand. Indeed, I think we can say that in the absence of financial transaction social accounting information various misunderstandings were permitted to develop. Let me mention two:¹

During World War I, Secretary of the Treasury William G. McAdoo, among others, was greatly concerned about the possibility that the huge wartime increase in the demands for funds would drive interest rates sharply up. As a matter of fact, interest rates did rise, but by no means as sharply as McAdoo had anticipated. Railroad bond yields rose from 4.12 percent in April 1917 to 4.42 percent in November 1918.² During World War II the yields on long-term U.S. bonds actually declined.³

There is a view still entertained by quite a number of economists that an increment in the currency and deposit liabilities of the banking and monetary system creates a net addition to the total sources of funds available to finance purchases of GNP, and so a net addition to aggregate demand.⁴

We think McAdoo's idea about the pressure exerted by wartime government financing on the money market and the view that "money creation creates new purchasing power" all involve misunderstandings about the way our economy operates and that the information in the flow-of-funds accounts helps to straighten out these misunderstandings. We hope to make clear why in the discussion that follows.

Excerpted, with permission, from Morris A. Copeland, "Some Illustrative Analytical Uses of Flow-of-Funds Data," in National Bureau of Economic Research, *The Flow-of-Funds Approach to Social Accounting*, Studies in Income and Wealth 26 (Princeton, NJ: Princeton University Press, 1962), 201–10.

Even before the flow-of-funds (FOF) accounts were developed, we had in outline form an answer to the question "How was World War II financed?" On the basis of the national income and product accounts one could, with some netting in the nonfinancial account, determine annual figures for federal nonfinancial receipts and expenditures and the resulting surplus or deficit. One could also determine, with somewhat more netting, annual figures on nonfinancial receipts, nonfinancial expenditures, and the resulting surplus or deficit for the other sectors of the economy combined. Such figures are given in Table 31.1 for 1939 and 1940-45.⁵ The deficit in the federal nonfinancial transactions account (federal national income and product account) for the six years ending in 1945 was \$183.4 billion. The other economic sectors taken together had a nonfinancial surplus (surplus on account of national income and product transactions) of \$177.5 billion. Were it not for the statistical discrepancy, the federal deficit and the consolidated net surplus of the other economic sectors would have been precisely equal. Thus what the federal government needed to borrow to finance the war was just matched by what the other sectors had to lend.

But, of course, the national income and product accounts do not tell us who bought the federal government bonds issued to finance the war, or what part the banking and monetary system played in financing it. For questions such as these we must turn to the FOF accounts. Tables 31.2 and 31.3 present a summary FOF picture of the way the United States financed the war, first the funds-raised side of the picture, then the funds-advanced side.

Table 31.2 shows federal government sources and uses of funds in the last prewar-and-war-preparation year and the first postwar year, and annual averages for the six years 1940-45. National security expenditures averaged some \$50 billion higher for the six years than in 1939. The FOF government account, unlike the government account in the national income system, includes enterprise payrolls and purchases. These rose sharply during the war. However, they did not add significantly to the financing problem. Enterprise revenues rose also. Other nonfinancial expenditures were not far from the prewar level. It was mainly the increase in national security expenditures that required financing. To finance them the federal obligations held by other sectors of the economy were increased from \$43 billion at the end of 1939 to \$255 billion at the end of 1945, a net increase of \$212 billion. Not quite all of this increase was needed to finance national security expenditures; \$25 billion was added to the federal cash balance.

The really interesting side of the picture is the funds-advanced side in Table 31.3. I have greatly simplified this side by combining the three FOF business sectors into one; by combining the state and local government sector, the several financial sectors (other than the banking and monetary system), and the rest of the world into an all-other sector; and by combining various types of transactions. Column 1 shows for the resulting four broad sector groupings where the \$212 billion borrowed by the federal government came from. The rest of the table shows for these four sector groupings a summary analysis of their other uses of funds and their sources of funds.

Table 31.1

How World War II Was Financed—A Summary Statement^a Based on the National Income and Product Account, 1939 and 1940–45 (billions of dollars)

	<i>The Year</i> 1939	<i>Total</i> 1940–45
Federal government		
A. GNP expenditures	5.2	320.2
B. Proceeds received from final sales ^b	4.6	102.2
C. Lines A minus B	0.6	218.0
D. Personal taxes minus transfer payments, grants, and net interest	–1.6	34.6
E. NI and P deficit	2.2	183.4
F. Lines D plus E	0.6	218.0
All other sectors combined		
G. GNP expenditures	85.9	682.9
H. Proceeds received from final sales ^c	85.3	895.0
J. Lines H minus G	–0.6	212.1
K. Personal taxes minus transfer payments, grants, and net interest	–1.6	34.6
L. Net funds advanced to federal government ^d	1.1	177.5
M. Lines K plus L	–0.5	212.1

^a This table is based on *National Income Supplement, 1954, Survey of Current Business*, Dept. of Commerce, Tables 2, 4, 5, 8, and 9.

^b Corporate profits tax liability plus indirect business tax and nontax liability plus contributions for social insurance less subsidies minus current surplus of government enterprises.

^c Total charges against gross national product other than the statistical discrepancy minus line B, above.

^d Gross private saving plus state and local government surplus on income and product transactions minus gross investment.

The two tables together bring out the overall intersector balance of accounts. For the federal government, nonfinancial expenditures during the six-year war period exceeded nonfinancial receipts by \$193 billion, and it made up the difference by net borrowing (lines B and C minus lines K and L). The other economic sectors together had a nonfinancial surplus that—except for statistical discrepancies—equaled the federal nonfinancial deficit, and the funds they advanced net of the borrowing among themselves equaled net federal borrowing.⁶ This balance is the analogue of that brought out by the national income and product accounts, but the addition of financial detail adds significantly to its meaning. In the national income and product accounts it tells us little more than the Keynesian $C + I = Y$, $S = Y - C$, hence $S = I$. The balance of the gross savings and investment account is just a corollary of the balance of the GNP accounts. But with the financial details added, it is clear that we are dealing with two separately articulating types of market adjustment: not only the adjustment in the

Table 31.2

Federal Government Sources and Uses of Funds, 1939-46^a
(billions of dollars)

	1939	1940-45 (av. per yr.)	1946
Sources			
A. Total nonfinancial sources (chiefly taxes and enterprise revenues)	7.5	34.7	54.6
B. Increase in outstanding federal obligations ^b	2.1	35.3	-22.5
C. Increase in trade debt and miscellaneous liabilities ^c	0.0	1.0	-3.2
D. Total	<u>9.6</u>	<u>71.0</u>	<u>28.8</u>
Uses			
E. National security GNP expenditures ^d	1.2	52.4	16.7
F. Other GNP expenditures ^e	3.9	2.3	2.7
G. Grants, donations, and insurance benefits	2.9	4.0	12.6
H. Interest plus tax refunds	1.1	2.6	7.1
J. Enterprise payrolls and current purchases ^f	1.3	5.6	10.5
K. Increase in cash on hand	-0.7	4.2	-22.8
L. Increase in other financial assets	0.0	0.0	2.0
M. Total	<u>9.6</u>	<u>71.0</u>	<u>28.8</u>

^a Figures are from FOF Table 17 except as noted below.

^b Excludes obligations held by the federal government sector.

^c Miscellaneous liabilities are mainly trust and deposit liabilities.

^d Total GNP expenditures (FOF Table 87) minus line F.

^e *National Income Supplement, 1954, Survey of Current Business, Table 2.*

^f Total payroll, plus rents plus other goods and services (FOF Table 17) minus line E minus line F.

nonfinancial markets, as a result of which aggregate demand equals aggregate proceeds (the GNP account), but also the adjustment in the financial markets between the demand for and the supply of loanable funds.

With the financial part of the income and money circuit thus made explicit in the FOF accounts, it becomes easy to see the point overlooked by McAdoo and others, and to see how, because they overlooked it, they were led to an unwarranted concern about the pressure on the loan and security markets of the greatly increased wartime demand for funds. There is no question about the reality of the increase in demand. What was overlooked was that this increase was necessarily accompanied by a parallel one in the supply of funds.⁷ The government's wartime nonfinancial deficit was responsible for the added demand for funds, but this deficit necessarily meant an equal nonfinancial surplus for all the other sectors of the economy taken together, and consequently an equal increase in funds supplied.

Table 31.3

Other Sectors, Sources and Uses of Funds, Six-Year Totals, 1940-45^a
(billions of dollars)

Sector	Increase in Federal Obligations Held (1)	Nature of Item in Col. 3 (2)	Source as in Col. 2 (3)	Increase in Liabilities (4)	(3) + (4) - (1) ^b (5)
A. Consumers	46.4	Net disposable nonfinancial sources of funds ^c	661.1	2.7	617.4
B. Businesses	28.1	Current surplus ^d	120.1	3.8	95.8
C. Banking	105.9	Ditto	6.7	112.8 ^e	13.6
D. Other (excl. federal govt.)	31.6	Total nonfi- nancial sources of funds	219.1	4.4	191.9
E. Total above	<u>212.0</u>		<u>1,007.0</u>	123.7	918.7

	GNP Expendi- tures (6)	Nonfinancial Uses n.e.c. (7)	Increase in Cash on Hand (8)	Increase in Other Financial Assets (9)	(6) + (7) + (8) + (9) (10) ^b
F. Consumers	510.7	59.5	50.5	1.2	621.9
G. Businesses	75.0	0.0	27.7	6.6	109.3
H. Banking	2.1	0.0		10.8	12.9
J. Other (excl. federal govt.)	63.7	117.5	5.4	3.7	190.3
K. Total above	<u>651.5</u>	<u>177.0</u>	<u>83.6</u>	<u>22.3^f</u>	<u>934.4</u>

^a Figures are from the following FOF tables: Table 1 (consumers); Tables 11, 13, and 15 (businesses); Table 31 (banking); and Tables 23, 38, 42, and 46 (other sectors except the federal government).

^b The differences between columns 5 and 10 reflect valuation adjustments and discrepancies in the flow-of-funds accounts.

^c Total nonfinancial sources minus sales receipts and taxes.

^d Total nonfinancial sources minus nonfinancial uses other than GNP expenditures. For corporations, a major component of current surplus is retained income plus depreciation and depletion charges.

^e \$112.5 billion of this amount represents the increase in currency and deposit liabilities; and \$25 billion, the increase in currency and deposit liabilities to the federal government.

^f Including a \$6 billion increase in net accounts receivable from and miscellaneous deposit, etc., claims on the federal government.

Another important point that Tables 31.2 and 31.3 together make clear is that, for the economy as a whole, including the banking and monetary system, the \$112.5 billion increase in the currency and deposit liabilities of the banking sector is not a source of any funds that finance an increase in aggregate demand. The six-year total of GNP expenditures was \$980 billion. This total, together with the \$250 billion of other nonfinancial expenditures, was financed—except for the statistical discrepancies involved—by the \$1,215 billion of nonfinancial receipts. As has elsewhere been pointed out: “Any level of production . . . at any level of prices . . . will generate the incomes out of which it could be purchased.”⁸

But no doubt it should be added that, when we look at the accounts of the several sectors of the economy separately, the \$112.5 billion increase in currency and deposit liabilities of the banking sector played a very significant role. The banking sector lent the federal government approximately \$106 billion. The currency and deposit increase provided the funds for this investment as well as the funds for most of the increase in the other financial assets of the sector. To the tune of \$112.5 billion the banking and monetary system was thus a mere financial intermediary. However, this sector did have some \$6.7 billion of inside funds of its own to invest—retained earnings, etc. (column 3).

We have considered the two misconceptions regarding the income and money circuit that I noted at the outset. There is still another type of misconception, which I hesitated to mention in my opening remarks because it is of a rather subtle nature. I would like to comment on it briefly at this point. Let me indicate its nature by quoting from George Leland Bach's *Economics: An Introduction to Analysis and Policy*:

When private spending on consumption and investment falls short of high production and employment levels, the government can increase total expenditures by spending more than it currently collects in taxes. At the extreme, it can finance this net addition by creating new money so as to assure a net addition to private spending. Or it can borrow existing funds from the public, hoping to draw on funds that would not otherwise be spent. . . .

Conversely, when total private spending is too high, with resulting inflation, the government can withdraw funds from the income stream by taxing away more than it spends. At the extreme, it may simply hold or destroy this net surplus. Or it may use the surplus to pay off government debt, hoping that the bondholders will not rush out and spend the funds they receive.⁹

This policy statement seems to imply three propositions that a good many economists have accepted, propositions the validity of which I want to question. The three propositions are:

1. A federal government nonfinancial deficit makes for an increase (or surplus makes for a decrease) in aggregate demand.
2. A federal government nonfinancial deficit financed by an increase (or a federal nonfinancial surplus resulting in a decrease) in currency outside banks

plus demand deposits adjusted makes for a larger increase (or for a larger decrease) in aggregate demand than a deficit financed by the sale to the public of (or a surplus that is used to retire publicly held) interest-bearing federal obligations.¹⁰

3. In considering the effect of a federal deficit (or surplus) on aggregate demand we can afford to neglect the difference between a deficit brought about by an increase in government expenditures and one brought about by a decrease in government receipts (or between a surplus brought about by a decrease in government expenditures and one brought about by an increase in government receipts).

I have said that the quoted policy statement implies these three propositions. Perhaps it would be better to say that the policy statement implies the first two and that those who accept Proposition 1 quite often do neglect the difference in effect between an increase in federal nonfinancial expenditures and a decrease in federal nonfinancial receipts (or a decrease in these expenditures and an increase in these receipts). Merely making Proposition 3 explicit is probably enough to make clear its questionable nature. But it should be noted that different kinds of nonfinancial receipts and expenditures need to be distinguished, too. If we are talking about changes in aggregate demand, surely an increase in federal GNP expenditures is the most direct way to push toward an increase in total GNP.

Calling attention to the different ways a deficit (or surplus) may be brought about also suggests the nature of the amendment needed in Proposition 1. There is as much reason to think that our economy could get accustomed to a federal deficit if it were to be continued for some time as there is to think that the economy could get used to a continuing export surplus. The nature of the effect of a federal deficit in a given period, like that of a deficit in the account of the rest of the world with the United States, depends on what has gone before. A billion-dollar deficit (or surplus) in a given year presumably has a greater effect when it represents a large increase in nonfinancial expenditures (or a decrease in nonfinancial expenditures) than when it represents a small one.

Proposition 2 treats the banking and monetary system as a mere financial intermediary, for it assumes that increases and decreases in the net indebtedness of the federal government to the banking sector are equal to the increases and decreases in the sum of currency outside banks and demand deposits adjusted. This assumption is approximately correct. It is true, however, as I have already pointed out, that it is only an approximation—the banking sector does have, much of the time, a small amount of funds of its own (inside funds) to invest in federal obligations and other earning assets. But this is a minor matter. The main questions about Proposition 2 are (a) that it makes too sharp a contrast between the two methods of financing a federal deficit (or ways of using a federal surplus); and (b) that the words “money creation” and “destruction” suggest that the federal government and the Federal Reserve System acting in concert can manipulate the sum of currency outside banks plus demand deposits adjusted, so that the variations in this quantity can be used as a means of effectuating government

credit policy in somewhat the same way that variations in the quantity of Federal Reserve credit can.¹¹ It seems unwise to assume such a possibility of manipulation or control of the quantity of currency outside banks plus demand deposits adjusted. We should, presumably, speak of influencing rather than controlling this quantity, recognizing that it is through manipulation of quantities such as Federal Reserve credit and member bank reserve requirements that influence on the quantity of currency outside banks plus demand deposits adjusted is exerted. Furthermore, as far as question (a) is concerned, it should be borne in mind that a federal nonfinancial deficit financed by an increase in the government debt to the banking sector may not stay financed in that way. If the banking sector holds marketable government obligations, businesses and individuals can elect to buy these obligations from the banking sector, drawing down their cash balances to pay for them. Also, the converse is possible if a federal deficit has been financed by selling marketable securities to the public.

Notes

1. [A third, relating to the role of trade credit, is omitted.—Ed.]
2. *Historical Statistics of the United States, 1789–1945*, Series App. 29 (Washington, DC: U.S. Department of Commerce, 1949).
3. *Ibid.*, Series N 203.
4. The following passages appear to illustrate this view:
 “Generally speaking, if expenditures are financed by the banking system, i.e., by the creation of money, total incomes will rise by a greater amount than if expenditures were financed by borrowing or by taxation since the new money represents a net addition to total income payments”—J. Brooke Willis, “Papers and Proceedings,” *American Economic Review* (May 1947): 227.
 “. . . common sense proclaims (even to the simple-minded) . . . the power possessed by the public and by the monetary authority to alter the rates of income flow—the former by putting money into and out of store, the latter by putting it into and out of existence”—D.H. Robertson, “Saving and Hoarding,” *Economic Journal* (September 1933): 411.
 “Investment can be greater than saving because money may be spent out of other sources than disposable income. Expenditures may be made from newly created bank money or from hoards”—Gottfried Haberler, “National Income, Savings, and Investment,” *Studies in Income and Wealth* 2 (New York: National Bureau of Economic Research, 1938), 160.
5. This table nets tax and interest receipts against transfer payments, grants-in-aid to state and local governments, and interest payments, because there is no need for the purpose in hand to show these debits and credits separately. They could, of course, be shown separately, if that were desirable.
6. The amount was \$212 billion plus the \$6 billion included in column 9 minus the \$25 billion increase in the federal cash balance.
7. Without this parallel increase in supply, government security prices could not have been pegged as they were during either war.
8. Committee for Economic Development, *Jobs and Markets* (New York: McGraw-Hill, 1946), 12.
9. George Leland Bach, *Economics: An Introduction to Analysis and Policy*, 2nd ed. (Englewood Cliffs, NJ: Prentice-Hall, 1957), pp. 305–6.

10. Elsewhere, in a passage that somewhat parallels that cited here, Bach speaks of the alternatives of covering the deficit "by money creation (directly, through the Reserve banks or through the commercial banks)" or "by borrowing from the public" and of money being "destroyed (directly or through redeeming Reserve bank or commercial bank-held debt" versus "taxation to retire publicly-held debt)"—"Papers and Proceedings," *American Economic Review* (May 1947): 237–38. Presumably he means by money creation and destruction, increases and decreases in currency outside banks plus demand deposits adjusted. Presumably, also, financing a deficit by money creation means increasing the Treasury's net indebtedness to the banking and monetary system (i.e., Treasury currency outstanding plus federal obligations held by the banking and monetary system minus the federal cash balance), while destroying money means decreasing such net indebtedness.

11. This sort of thing seems to be suggested, too, in the passage from D.H. Robertson cited above.

JOHN C. DAWSON

Saving-Investment Process Analysis for the 1950s

(1964)

An Exploratory Hypothesis

Keynesian doctrine emphasizes the connection between investment and saving that occurs via goods and services markets. Although saving is equal to investment, the level of the two flows is determined by the investment decisions and the consequent income circuit adjustments. In using the saving-investment process to analyze the U.S. financial system we will adopt a parallel hypothesis for the financial system: Ultimate lending is equal to ultimate borrowing, but the level of the two flows is determined by the borrowing decisions and the consequent financial market adjustments. We thus augment rather than replace the Keynesian saving-investment hypothesis.

The causal primacy of the demand for funds in aggregate financial markets is asserted on several grounds. For many transactors real investment and the associated borrowing are parts of a single joint decision; discretion over investment implies discretion in obtaining the necessary funds. Also, in most financial markets lenders commonly wait for borrowers to initiate the transactions. The operation of such key financial markets as bank loans, corporate securities, and consumer credit lends support to the position. No doubt the supply of funds side is at times important—perhaps even dominant—in some particular financial markets, as is true of the supply side in some particular goods markets. But in the aggregate we judge the demand for funds to predominate most of the time in determining financial market flows.

Our hypothesis is obviously not one of the currently fashionable sort that can

Excerpted from John C. Dawson, "An Analysis of the Saving-Investment Process, 1953–62," (unpublished paper 1964): 5–20.

be rejected by a definitive statistical investigation. It is, we hope, one of a very useful species that we label exploratory because it suggests which facts may be the important ones and helps us to interpret them. Our hypothesis will have proven useful if the saving-investment process facts are broadly consistent with this interpretation and, in particular, if a plausible financial mechanism can be found by which ultimate lending adjusts to ultimate borrowing.

A Trial Analysis

Guided by our exploratory hypothesis, we now examine the saving-investment process in the United States for the 1952–62 period using the scheme presented earlier in reading 10. The analysis will move from left to right across Figure 10.1 (see p. 150), starting with real investment and its financing, especially private ultimate borrowing, whose impact is felt on the major financial markets. We then consider the operations of banks and other financial intermediaries, the impact of monetary policies, and the financing of the federal deficit. We end with the placement of private saving into ultimate lending.

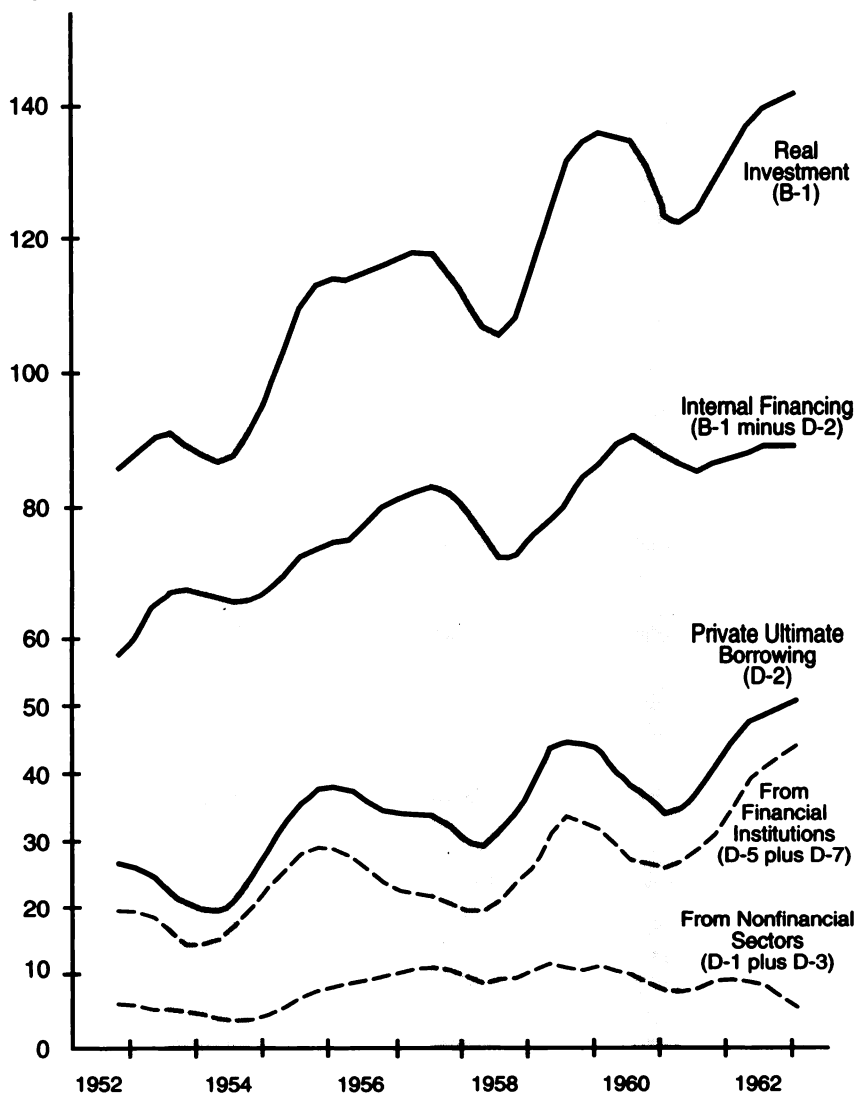
The analysis will use time series charts that are partial cross sections of Figure 10.1, the flows appearing on the charts as four-quarter centered-moving averages. Flow-of-funds data are rough estimates containing substantial erratics, and the use of moving averages points up their major cyclical movements. The charts are keyed to Figure 10.1 to facilitate identification of the flows in the scheme. With one or two exceptions we shall not break down the flow aggregates of Figure 10.1. One advantage of the scheme is the more detailed analysis that it would permit, but we shall concentrate here on uniting several basic types of aggregative financial analysis into a single whole.

The Financing of Investment

Figure 32.1 presents an answer to the question, How is U.S. investment financed? Gross real investment and the two methods of its finance, internal financing and private ultimate borrowing, appear as defined for the lower left portion of Figure 10.1. The borrowing in turn is shown as obtained either from banks and other financial institutions or direct from ultimate lending.

The movement of the gross real investment curve at the top of Figure 32.1 outlines the basic cyclical pattern of the 1952–62 period. (Recession periods are shown shaded on the figures.) A portion of this cyclical movement is financed by the movement of internal financing, a result to be expected since investment fluctuations generate saving and internal financing by means of the income circuit. Nevertheless, the cyclical variation in private ultimate borrowing is even greater. Immediately after the 1953–54 recession, investment rises much faster than internal financing and there is a sharp rise in borrowing. This pattern repeats itself after the 1957–58 and 1960–61 dips. On the other hand, farther along in the

Figure 32.1 The Financing of Real Investment (billions of dollars)



upswings, in 1956–57 and 1959–60, internal financing maintains its pace as investment tapers, and in each case the borrowing starts an early decline. During the 1953–54 and 1960–61 recessions the borrowing curve absorbs most of the drop in investment, but in 1957–58 the drop in internal financing is more severe. There is, incidentally, the suggestion in the recoveries that private borrowing leads the upswing. In addition, the breakdown of private ultimate borrowing makes clear that borrowing is concentrated on financial institutions. Direct bor-

rowing from the nonfinancial sectors has only a modest cyclical movement, and a declining trend in the more recent period.

Taken as a whole, Figure 32.1 measures the extent to which real investors as a group use the financial system and the extent to which this use is focused on financial institutions. Except for the late boom periods, private ultimate borrowing tends to follow the pattern of the real investment curve; intensity of use of the financial system by private borrowers has a broadly procyclical pattern. We take this pattern as supporting our causal hypothesis that the amount of ultimate borrowing is determined by the borrowing decisions of the private sectors—in effect, decisions to make investment that they cannot finance internally.

If we accept it as a first approximation¹ that the flow of private credit will be determined by borrowers rather than lenders, we are asserting that the supply of private credit adjusts to its demand. Since most of the variations in private borrowing are met by flows from financial institutions, we must inquire how the private credit extension of financial institutions is able to accommodate to this demand.

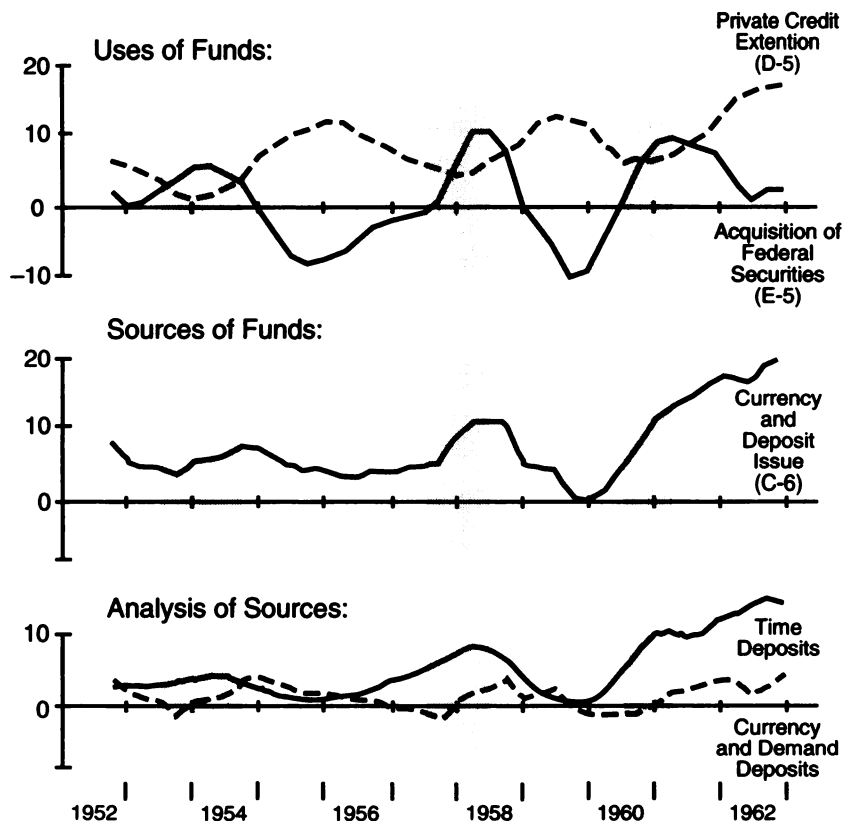
The Role of Financial Institutions

Private ultimate borrowing is now traced back to the private credit extension of banks and other financial institutions, considering these flows in the context of the intermediary role of these two financial sectors. We begin with that of banks, which is portrayed in Figure 32.2. The sources of funds curve in the center measures funds the banking sector obtains from ultimate lenders by its currency and (demand plus time) deposit issue. The two uses of funds curves at the top show funds flowing out of banks to private ultimate borrowing (on account of bank loans, securities, mortgages, consumer credit, etc.) and to federal borrowing (on account of federal securities). The movement of the two uses of funds curves approximately exhausts that of the issues curve.

During the 1950s there is a fairly consistent pattern in these curves in Figure 32.2. The countercyclical movements in the issue of claims, and even more strongly in the bank acquisition of federal securities, contrast with the generally procyclical movement in private credit extension by banks. Thus during the upswing years 1955 and 1959 banks had a declining issue of claims, a declining volume of funds to place. Nevertheless, in both years private credit extension increased and this was accompanied by large declines in the acquisition of federal securities. During all three recessions the issues curve increased, and this was accompanied by increased placement in federal securities and a fall or little growth in private credit extension. After the 1960–61 recession, however, the pattern changes. The issues curve does not reverse itself as in the preceding recoveries but continues its rapid rise. And the banks this time do not liquidate federal securities.

How are we to interpret such behavior? The countercyclical character of the

Figure 32.2 Banking Sector (billions of dollars)



currency and deposit issue suggests the influence of monetary policy. We shall presently argue that this curve represents a mixture of Federal Reserve and saver decisions, but is not much influenced by the commercial banks themselves. For the moment let us assume that the banks do not control the volume of this issue. If so, banks would be prevented from controlling the *in toto* placement of their funds, the total that is allocated either to private credit or federal securities.

Now the private credit extension of banks in Figure 32.2 is simply the borrowing demand of Figure 32.1 seen here from the supplier's point of view. Formally its movement reflects the supply and demand adjustment in the bank credit market. But if, as we asserted, this flow is generally determined by borrowers, then its supply by banks must generally comply with borrowers' demands for private credit. While this view does not preclude rationing effects on particular financial markets or even at times on bank private credit as a whole, it does imply that most of the time banks make it their business to provide credit when it is needed.

The banking system is able to accommodate to private credit demand by making the adjustments in its federal security portfolio that appear in Figure 32.2. More schematically, if the claims issue of banks is imposed on them and if their private credit extension is an accommodation to the borrowers' demand, then their acquisition of federal securities necessarily becomes a residual not determined by the banks themselves. This conclusion has important implications for the operation of the federal securities market, to which we shall return.

The affairs of nonbank institutions in Figure 32.3 are markedly different. The steady drift upward of the thrift, insurance, and pension claims issue over several cycles indicates their cyclically inflexible sources of funds, reminding us of the contractual nature of the massive insurance and pension claim areas. As for thrift institutions, they, too, are unable in the short run to influence saver choices very much; the rates they offer are inflexible due both to governmental regulation and the nature of their savings instruments. Thus, although the reasons differ, nonbank institutions as well as banks have little immediate control over these major inflows.

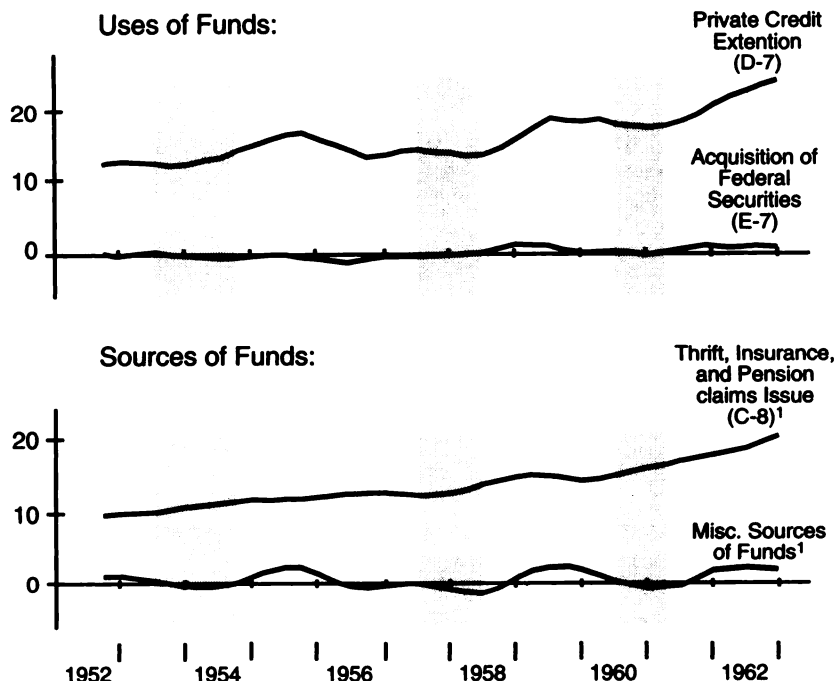
The private credit extension of the nonbank institutions is larger than that of banks but much more stable. Its only cyclical movement is a spurt at the start of each upswing. Unlike banks, these institutions do not manipulate their federal securities portfolios to provide the modest cycle in their private credit extension. As Figure 32.3 indicates, this movement is financed by a few flexible but minor sources of funds, mainly used by finance companies. We are led to conclude that nonbank institutions are much less able than banks to accommodate to variations in the total of private credit demanded of them.

The contrast between Figures 32.2 and 32.3 demonstrates the overwhelming imprint of banks on all financial institutions as regards cyclical movements in issues, private credit extension, and federal securities acquisition; the bank behavior pattern governs these variables for the entire group. And even when a countercycle is imposed on banks in the issue of their claims, they have been able—largely because of their federal securities portfolio—to provide for a strong procyclical extension of private credit. As we saw in Figure 32.1, this cycle in credit extension has been essential to financing the cycle in real investment.

Monetary Policy Impact

Our discussion of banks as financial intermediaries has already encroached on the tracing of Federal Reserve policy. We now approach it directly, considering the channels of monetary policy impact that are implied by the saving-investment process. Federal Reserve action, in affecting the deposit liabilities of the banking sector via the reserve mechanism, will be influencing the placement of ultimate lending with the banking sector—see flow (C-6) in Figure 10.1. This influence could be most directly transmitted to real investment at the left via the private credit extension of banks (D-5) to private ultimate borrowing (D-2) and thence to investment (B-1). Alternatively, two less direct routes are available.

Figure 32.3 Nonbank Financial Institutions (billions of dollars)



¹ Open-Market paper issued by sales finance co's. and FHLBB loans to Saving and Loan Associations are here removed from C-8 and combined with bank loans of sales finance companies as misc. sources.

The impact could spread by means of the private credit or federal security markets to nonbank financial institutions and influence their flow of credit to private borrowers (D-7). And conceivably the impact could move from the currency and deposit liability (C-6) or the federal securities market (E-1) to ultimate lenders and influence their direct credit extension to private borrowers (D-1) or their placement with financial institutions (C-6 and C-8). Ultimately, however, these paths must all converge on private borrowing (D-2) if investment is to be influenced by means of the financial channels shown in Figure 10.1.

On several counts this loanable funds view of monetary policy is rather at odds with Keynesian liquidity preference theory and its contemporary extension, asset preference theory. Real investment is here influenced via the borrowing that finances it; private sector debt has a more immediate role than private sector assets. Contrariwise, for financial institutions their credit extension—that is, their asset rather than liability change—plays the key part. Finally, a flow volume analysis more naturally observes credit rationing than interest rate effects. Since much of the effectiveness of Federal Reserve policy appears to stem from such rationing, this emphasis may prove not amiss.

To trace monetary policy impact, then, we first analyze the banking sector claims into the money and time deposit increments seen on the lowest section of Figure 32.2. We expect to observe countercyclical policy in the movements of the money curve, and such is the case, though less distinctly so, after 1960. However, it is the increasingly large movements in time deposits that decisively affect the total volume of funds placed with banks. Even complete control of the quantity of money would apparently not suffice to control the flow of funds into the banking sector.

The peculiar institutional relation between bank time and demand deposits is a key to this behavior. Saver placement of funds into bank time deposits, unlike that into any other credit instrument, equally removes funds from demand deposits as a whole. The time deposit decisions of savers thus become a major immediate determinant of the money increment. Furthermore, because member bank reserves are required for time deposits, these deposits are an integral part of the bank reserve mechanism; reserves provided by the Federal Reserve influence time deposit expansion in the same manner as demand. In turn, saver discretion over the distribution of deposits will affect the weighted average required reserve ratio. Thus the issue of each of the two major bank claims is determined by a mixture of Federal Reserve action and saver decisions.² Countercyclical monetary policy may show up either in demand or time deposits, depending on the behavior of depositors, especially their time deposit response to tight or easy credit conditions.

Judging by Figure 32.2, the alternations of Federal Reserve policy during the 1950s have increasingly worked themselves out via the time deposit rather than the money curve. These saver decisions were presumably influenced by the rate differential between time deposits and short-term federal securities—for example, funds being drawn into time deposits with the fall in federal rates during recessions—thus promoting the expansion in both the time and demand deposit curves during easy credit. On the other hand, the two curves have opposing movements in 1956–57 and in 1962, the time deposit curve rise offsetting a tightening influence of the money curve on bank sources of funds. These were both periods, it will be recalled, in which the time deposit rate ceiling was raised by the Federal Reserve.

However, if we consider banking sector sources of funds as a whole in Figure 32.2, the countercyclical pattern during the 1950s becomes very distinct, as does its cessation with the sharp expansion during the 1961–62 upswing. Since it is possible to trace the major alternations in this curve back to Federal Reserve open-market and reserve ratio operations, we judge these movements in total bank issues to be attributable primarily to Federal Reserve rather than saver influences. Taking this curve as a rough proxy for countercyclical monetary policy, we consider the routes by which it may influence investment.

On the evidence of Figure 32.2, banks on the whole do not transmit countercyclical policy—as we see it in their currency and deposit issue—to their

extension of private credit. Only late in the two upswings, of 1956–57 and 1959–60, do the data support such a view. At these times the private credit extension of banks tapers, and these movements can be traced via private ultimate borrowing in Figure 32.1 to a tapering real investment. Of course, such a pattern is also consistent with the view that late in these booms internal financing was plentiful and the borrowing demand declined.

If at most times banks do meet the credit demands made upon them, then monetary policy impact is passed to bank transactions in the federal securities market and helps explain the enormous movement in this curve on Figure 32.2. Bank purchases during recessions and sales (or reduced purchases) during upswings make for desirable countercyclical interest rate changes. But the fact that banks are able to convert a policy-imposed countercycle in their issue of claims into a procyclical movement in private credit extension defines a serious loophole in the main path of monetary policy linkage to real investment.

We turn now to the alternative paths by which Federal Reserve policy could move toward real investment. The private credit extension of nonbank financial institutions in Figure 32.3 seems to reflect somewhat the same market influences as that for banks. While the nonbank extension is hardly countercyclical, it may be somewhat stabilizing because of its inflexibility. As with banks, a case can be made for credit rationing late in the upswings of 1956–57 and 1959–60. It seems likely that a breakdown of nonbank private credit extension—for example, to show mortgage and state and local security acquisitions—might provide added evidence of rationing.

The remaining channel of impact is via savers themselves as they respond to financial market conditions. The flow of ultimate lending direct to borrowing that we have at the bottom of Figure 32.1 clearly does not support countercyclical influences on real investment from that direction. And we have seen in Figure 32.3 that saver placement with nonbank financial institutions is a quite steady trend. Saver influence would seem to be confined to any influence on the countercycle in the issues of the banking system itself.

Our conclusions on the impact of monetary policy as seen in the saving-investment process may now be summarized. There is an identifiable countercyclical Federal Reserve influence on the currency and deposit issue of the banking sector. But we see little evidence that this influence is transmitted to private borrowing by banks, other financial institutions, or savers. Instead, bank behavior directs this countercyclical force to the federal securities market, diverting it away from major flow impact on real investment. Breakdowns of the various flows, however, might well provide additional evidence of credit rationing impact on investment.

Federal Finance

Orthodox Keynesian economics provides an analysis of the effects on the econ-

omy of changes in government expenditures and tax receipts. But although Keynesian fiscal policies usually imply increased deficits in recessions and reduced deficits or increased surpluses in prosperity, Keynesian models provide no way of analyzing the ease with which the required funds can be obtained or the impact of the borrowing on financial markets. A full analysis of federal fiscal policy should take account of these relations with the financial system. To do so we shall trace the financing of the federal deficit to the groups providing funds by acquiring federal securities, largely banks and the private sector.

In Figure 32.4 the federal deficit curve shows three deficit periods, one related to the Korean War and the 1953–54 recession, and two others following the 1957–58 and 1960–61 recessions. These deficits are financed by federal ultimate borrowing—that is, federal security issues less funds advanced by the federal government, both shown in the center section. We see that despite the growing volume and cyclical sensitivity of federal lending, the deficit pattern largely remains duplicated in the issues curve.

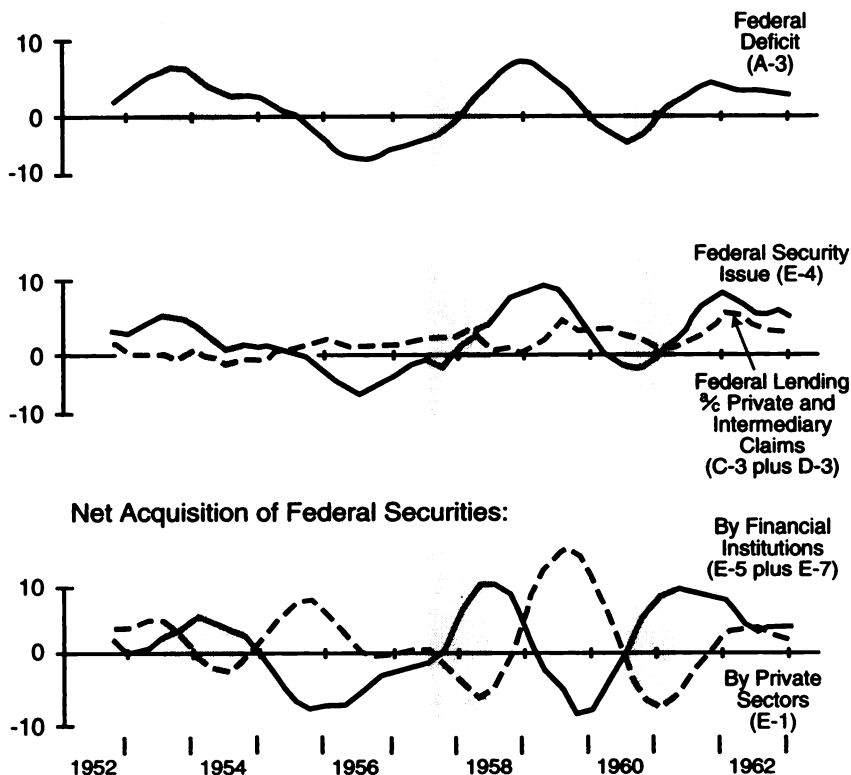
When we ask who bought these issues, the situation is more complex; the bottom section shows the “acquiring” sectors extensively liquidating as well as buying federal securities and with little apparent relation to the issues that we see above. The acquisition of federal securities by financial institutions is almost entirely by banks, which was interpreted above as the result of two major forces, the private credit demands placed on banks by ultimate borrowers and the total availability of credit imposed on the banking sector. The combined impact of the cyclical variation in both these forces is thus transferred to the bank dealings in federal securities. And the consequence is the rise in bank acquisitions in the recessions and the liquidation in the subsequent boom years.

On the other hand, the private sector acquisitions—largely business and consumer—have a different cyclical orientation. These sectors liquidate federal securities during our three recessions and make acquisitions during the upswing years that follow each. Their behavior may seem reasonable if we recall that consumers and especially businesses are likely to have increasing funds to place as incomes grow rapidly during upswings and hence will acquire federal securities at such times. During recessions these sectors may well be less liquid and wish to sell them. Here again the federal securities market feels the impact of adjustments in other markets.

We are face to face statistically with the institutional fact that the federal securities market, while it does serve to finance the federal government, functions in important additional ways as well. As the key liquidity instrument of the system, federal securities are a kind of residual item in the accounts of many transactors, their short-term excess funds being placed in this instrument. As a consequence, adjustments in a variety of other markets are reflected in and focused on this market, making it cyclically very sensitive. The writhing acquisition curves in Figure 32.4 are the result of such forces.

A final characteristic of these two curves is their closely synchronized inverse

Figure 32.4 Analysis of Federal Finance (billions of dollars)



behavior. In the recessions the private sectors are liquidating and the financial institutions are buying federal securities; in boom years the reverse often occurs. In effect they buy and sell to each other. From the viewpoint of the financial system as a whole, what we have is a novel type of intermediation that has developed since World War II. The federal securities liquidated by banks in meeting borrowing demand during tight credit periods are passed on to the private sectors acting as ultimate lenders. In this way banks can obtain added funds from ultimate lenders at such times without increasing the issue of their claims. During recessions, by acquiring the federal securities being liquidated by ultimate lenders, banks are able to reduce private credit extension even if their issues rise. The result is a very flexible mechanism for financing investment variations and one that is not closely tied to the issue of institutional claims.³

We are now in a position to examine the relation of the federal deficit to this process. The countercyclical federal deficit that automatic stabilizers tend to create in a recession is relatively easy to finance. Given easy credit Federal Reserve policies, banks are built-in security buyers during recessions. Figure 32.4 shows that in 1954, 1958, and 1960, financial institutions absorbed both the

sales by private sectors and any new federal issue. Furthermore, if the automatic stabilizers during boom periods result in a federal surplus, as occurred in 1956 and 1957, then the federal government can take over from private sectors the task of absorbing the securities that the financial institutions run off. But to the extent that the deficit is not countercyclically oriented—as in the Korean War financing in 1953 and the 1959 deficit—an added burden is placed on financial markets. In these years financial institutions were not buying, and it fell on the private sectors to absorb the new issues. In 1959, private sectors had to absorb both a large federal issue and a large institutional liquidation as well. In these circumstances we might well expect a tightening of the federal security market.

Our language implies that the private sectors are residual buyers of federal securities. We are assuming that the total of security issues by the federal government is not influenced by rates in this market. A similar assertion could be made about institutional dealings in federal securities, given our interpretation of these as a residual use of funds for banks. The groups whose federal security dealings respond to these rates are thus found entirely in the private sector so that, as rates adjust to clear the market, only variations in private sector purchases will be induced. This conclusion has consequences for savers' behavior, to which we shall return.

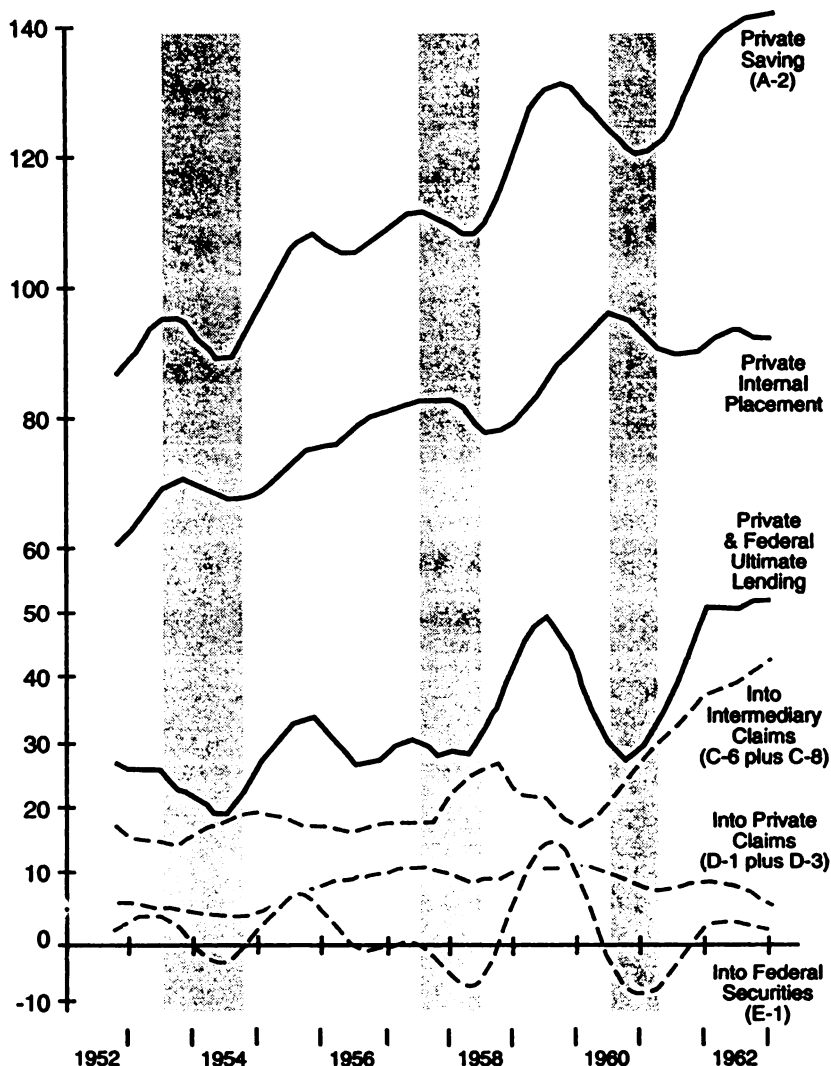
The Placement of Saving

We have arrived at the origin of the saving-investment process, the point at the right side of Figure 10.1 where private sectors are placing their saving into either internal financing or ultimate lending. These flows are portrayed in Figure 32.5: private saving at the top; internal placement at the center; and at the bottom, ultimate lending divided into three components—placement into institutional claims, federal securities, and private securities and mortgages.

Often savers as a whole are thought of as choosing to place funds in various financial instruments in a manner analogous to an individual saver—according to given tastes and in response to the various interest rates. Figure 32.5 taken by itself seems to support this view of savers' behavior. During the major upswing years of 1955 and 1959, when security rates rose relative to rates on institutional claims, placements into federal securities rose sharply and those into institutional claims dropped. In 1961, when security rates did not so rise, much of the increase in ultimate lending is in institutional claims. During recessions, when security rates fell relatively, the declines in ultimate lending are confined to the two security curves, while the institutional placement rises. In Figure 32.5 only the 1956 decline in federal security placement embarrasses this view of saver choice. But the microeconomic likeness does not fully portray savers as a whole. Let us reconsider these fluctuations in saving placement from the perspective of the preceding analysis.

In boom years such as 1955, 1959, and 1961, investment rises rapidly, a good

Figure 32.5 The Placement of Saving (billions of dollars)



portion of which is financed by increased borrowing from financial institutions (see Figure 32.1). If in such circumstances a tight Federal Reserve policy restricts bank sources of funds, as in 1955 and 1959 (see Figure 32.2), this will be seen as restricted placement by savers in institutional claims (see Figure 32.5). To meet increased borrowing demand under tight credit conditions, banks will be forced to turn away or liquidate more government securities (see Figure 32.2), and these, together with any net issue of the federal government (see Figure 32.4), will have to be picked up by private sectors as increased ultimate lending

(see Figure 32.5). As we noted, the 1959 combination of heavy private and federal borrowing necessitated a very large absorption of federal securities by ultimate lenders. On the other hand, a prosperous year such as 1956, when private borrowing demand is less intense and when the federal government is running a surplus, results in savers absorbing practically no federal securities. And if, as in 1961, the monetary policy is not tight, the increased saver placement takes the form of intermediary claims.

The pattern is even more uniform for the recession years. Declining investment is accompanied by declining borrowing demand, and the latter plus easy credit policies lead financial institutions both to increase their claims issue and to absorb more federal securities, perhaps enough to finance the federal deficit. As a result, in ultimate lending we have increased placement in institutional claims and decreased placement in federal securities.

This interpretation of saving placement makes plausible the hypothesis that ultimate borrowing tends to determine ultimate lending and to do so via financial market channels. For the analysis suggests ways in which ultimate lending is constrained by the borrowing and intermediation process. If, as we have suggested, the private sectors are the one group whose federal security transactions are responsive to market rates, then they will be the residual buyers of federal securities. Consequently, private sector acquisition of federal securities will be the resultant of federal government issues and financial institution dealings in this market, and these variables—not saver choice—will determine saver placement in federal securities in Figure 32.5. Again, to the extent that the Federal Reserve imposes the countercycle in the issue of institutional claims, Federal Reserve influence—not saver choice—determines the pattern of placement in intermediary claims in Figure 32.5. If Federal Reserve influence is not paramount in determining the institutional claims issue, and saver choice in response to interest rates is influential here, our hypothesis will still stand, for if savers place less with banks because of rising security rates, the probable result will be dollar for dollar further liquidation of federal securities by the banking sector. These securities will in turn be picked up by savers as residual buyers in the federal securities market. Such saver choices would serve to alter the composition but not the total of ultimate lending. Since most of the variation in ultimate lending in Figure 32.5 can be accounted for by institutional claims and federal securities, the influence of the financial system on the placement of saving as a whole may be decisive.

Still, this question may be pressed: Are not savers, if they respond to interest rate changes in placing their funds, behaving as we first proposed? The answer is yes, but we need to be clear about just what is being explained. In a market in which only one side—say, the supply of funds side—responds to market terms such as the interest rate, what is explained by this response is the determination of the rate and not the amount of funds provided. The latter will be determined by the demand for funds, which the rate adjustment does not affect. In the case at

hand, if we are correct, the change in saver placement into ultimate lending is not so much the result of interest rate adjustments as it is their cause. And ultimate lending would appear to accommodate to the level of ultimate borrowing by means of the financial market adjustment.

We step back now from this picture of the mechanics of financial market operation to pose a final, broader question about saving placement. Suppose it granted that savers as a whole are not at liberty to decide how much saving they place with the financial system. How comes it that private sectors will have enough funds available to provide any required volume of ultimate lending? Figure 10.1 asserts that private saving is always adequate to finance both internal placement and ultimate lending. Why is this so?

Our dual hypothesis provides an explanation. One part of the hypothesis asserts that an ultimate lending increase will in general be induced by an increase in ultimate borrowing, the causal influences moving via financial market channels in ways we have tried to indicate. To the extent this increased borrowing is accompanied by increased real investment or federal deficit, the latter will, according to the Keynesian part of the hypothesis, cause increased private saving via increases in aggregate production and income. This increased private saving will provide the funds needed by savers to increase their placement in ultimate lending. To the extent that the increased borrowing under consideration is not accompanied by increased real investment or federal deficit, internal financing of investment will have declined, as can be seen from Figure 10.1. In this case no change in private saving is caused via the income circuit, but since savers need to place less into internal financing, more of their saving is available for ultimate lending. The upshot is that if the dual hypothesis holds, there is little likelihood of a cyclical shortage of private saving as a whole. There is no denying Keynes's central criticism of the classical loanable funds doctrine: If investment, viewed as the origin of the aggregate demand for funds, increases, then we must surely take into account that saving, viewed as the origin of the aggregate supply of funds, will be increasing as well.

Summary

The saving-investment process is a macroeconomic scheme of financial analysis depicting how saving is placed with the financial system as ultimate lending, passes through various financial institutions and market channels, and ultimately finances either real investment or the federal deficit. We specify statistically the various flows in this scheme by means of a modified flow-of-funds matrix (see reading 10) and here present a U.S. analysis for the 1952–62 period in which the scheme integrates several basic but partial financial analyses.

Our causal interpretation of the process is premised on the primacy of aggregate demand in financial as well as nonfinancial markets, on the priority of investment over saving, and of ultimate borrowing over ultimate lending. On this

basis the impact of movements in federal and private ultimate borrowing that are associated with variations in the federal deficit and real investment are traced via financial markets through to ultimate lending. The federal security market plays a key role in the analysis because much of the impact of private ultimate borrowing is transferred to this market by the action of the banking sector. As savers respond to financial market conditions in placing their saving, especially in federal securities, the ultimate lending total adjusts itself to ultimate borrowing. Moreover, this process influences the composition as well as the size of ultimate lending. Taking account of financial institution behavior, saver placement in federal securities tends to be high and placement in institutional claims tends to be low to the extent that there is a strong private borrowing demand, a tight Federal Reserve policy, and a large federal deficit.

Keynesian analysis is at some pains to point out that saving in the economy as a whole is not determined by the aggregate of individual saving decisions. Our analysis suggests an analogous constraint on savers in the financial placement of their saving. Investment and ultimate borrowing decisions circumscribe aggregate saving behavior, the former by its income circuit influence on saving and the latter by its financial market influence on ultimate lending. Saving-investment process analysis supports a modern, empirical version of the loanable funds theory that is complementary to Keynesian nonfinancial theory.

Notes

1. We consider below the late boom periods as exceptions.
2. The elimination of the banks themselves from the list presumes (1) that the Federal Reserve has control of member bank reserves, (2) that bank reduction of excess reserves and acquisition of vault cash are not substantial sources of expansion capacity, and (3) that banks are constrained by custom and regulation from active cyclical manipulation of time deposit rates.
3. Figure 10.1 is misleading in respect to this process because the arrow directions there hold only for positive values of each flow. The federal security market arrows would need to be reversed to show federal retirements and liquidations by institutions or ultimate lenders.

BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM

Financial Flows and Interest Rates

(1971)

1. Introduction

Interest rates in securities markets have fluctuated very sharply over the past half decade, although the trend in yields has generally been upward. In 1969 and early 1970, when inflationary expectations were strong and bank credit expansion was curtailed, market rates reached levels as high as any in U.S. history. Then during 1970 and early 1971, as economic activity slowed and monetary policy eased, interest rates dropped more sharply than in most earlier periods of decline.

Most recently, interest rates have tended up again, reversing some of their preceding decline. These recent yield increases—which occurred in the aftermath of a rapid expansion of gross national product during the first quarter of 1971—were accompanied by large credit demands in long-term financial markets. They also came during a time when a flow of private short-term investment funds into foreign money market centers—indicating in part expectations of upward revaluations of some European currencies—had exerted some pressures to bring short-term U.S. rates somewhat closer into alignment with higher interest rates in foreign centers. See Table 33.1.

The factors that account for the behavior of interest rates at any point in time are highly complex—reflecting, in addition to current developments, lagged responses to past events and expectations of future events. To try to sort out more persisting underlying relationships among interest rates, credit flows, and mone-

Reprinted from Board of Governors of the Federal Reserve System, "Interest Rates, Credit Flows, and Monetary Aggregates Since 1964," *Federal Reserve Bulletin* (June 1971): 425–40.

Table 33.1

Selected Interest Rates (in percent)

Rates	Earlier highs ¹	1971 lows ¹	June 15, 1971
Short-term:			
Treasury bills 3-mo.	7.87 (Jan. 70)	3.38 (Mar.)	4.95
Commercial paper, 4 to 6 mos.	8.84 (Dec. 69)	4.19 (Mar.)	5.50
Long-term:			
10-yr. U.S. Govt. ²	7.91 (May 70)	5.70 (Mar.)	6.70
Corporate Aaa, new issues ³	9.12 (July 70)	7.00 (Feb.)	7.90

¹ Monthly averages.² Estimated from yield curve.³ Estimated by First National City Bank, except latest figure which is Federal Reserve estimate for week ending June 18, 1971.

tary aggregates, this article reviews interest rate movements from 1964 to early 1971.

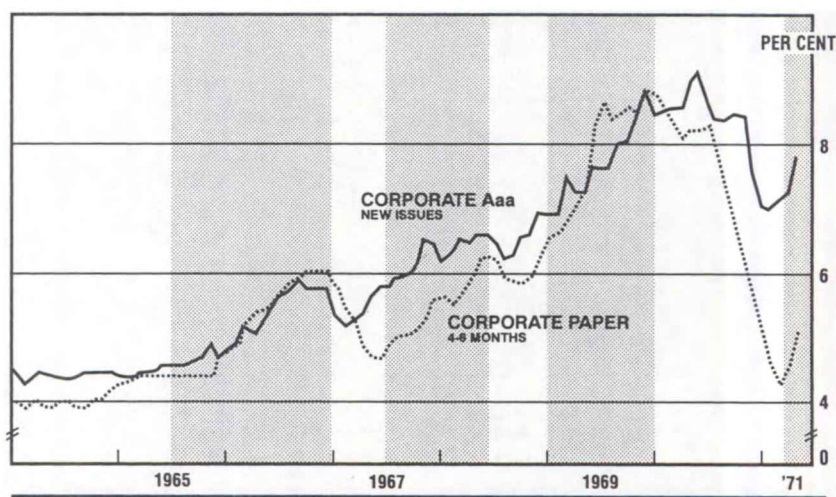
The review starts with the years just prior to the escalation of U.S. involvement in the Vietnamese conflict—that is, early 1964 to mid-1965. In those years, while short-term rates had risen appreciably from the lows reached in the 1960–61 recession, interest rates in general remained remarkably stable by present standards, particularly in long-term markets. Moreover, the levels of rates prevailing—with long-term bonds generally yielding somewhat above 4 percent and rates in short-term markets running a bit lower—were not unusual in terms of previous U.S. financial history.

After mid-1965, however, interest rates began to trend sharply upward and to show much greater volatility. The 6-year span since mid-1965 divides logically into several subperiods that represent fairly distinct patterns of increasing or decreasing yield movements.

Data in Figure 33.1 and Table 33.2 differentiate these various subperiods and show summary measures of interest rate changes and some other economic data. The interest rates selected for these exhibits are two relatively sensitive market series showing borrowing costs for major corporations—namely, the rate on 4- to 6-month prime commercial paper, and the average rate on newly issued corporate bonds of Aaa quality. These two series are broadly representative of yields in short- and long-term financial markets, although any single interest rate series on a particular type of debt will, of course, occasionally show divergencies from the general pattern of rate changes.

The yield on new corporate bonds was selected as the most representative measure for long-term market yields. Interest rates on long-term Treasury bonds tended to move more sluggishly during this time span, because the 4.25 percent interest rate ceiling foreclosed new Treasury debt offering of long maturity dur-

Figure 33.1 SUBPERIODS Showing Different Patterns of Yield Movement



Monthly averages. First National City Bank estimates of average investor yield on new issues of high-grade corporate bonds adjusted to Aaa basis; prime commercial paper, dealer offering rates.

Table 33.2

Summary Data for Seven Periods of Interest Rate Changes, End 1963 to Early 1971 (in percent unless otherwise indicated)

Item	Q1 1964– Q2 1965	Q3 1965– Q4 1966	1st H 1967	Q3 1967– Q2 1968	2nd H 1968	Year 1969	Q1 1970– Q1 1971
Interest rate levels, end of period:							
Commercial paper.....	4.38	6.00	4.72	6.08	5.96	8.62	4.59
Corporate Aaa, new issues....	4.48	5.76	5.58	6.56	6.69	8.41	7.05
Interest rate changes:							
Commercial paper.....	.47	1.62	-1.28	1.36	-.12	2.66	-4.03
Corporate bonds.....	.14	1.28	-.18	.98	.13	1.72	-1.36
Annual rates of increase:							
Real GNP.....	5.6	6.2	1.1	5.0	3.5	1.6	.4
GNP deflator.....	1.8	2.8	2.4	4.2	4.3	5.0	5.4
Current-dollar GNP.....	7.4	9.2	3.6	9.4	7.9	6.8	5.8
Money stock (M1).....	4.1	3.5	6.8	7.2	7.7	3.1	6.2
Average level during period:							
High-employment budget surplus (in billions of dollars at annual rates).....	3.9	-5.4	-13.0	-15.5	-4.4	3.9	-.4

NOTE.—Based on quarterly data for terminal quarters in each period, except growth rate of M_1 —which is calculated from averages for terminal months in the periods—and high-employment budget surplus—which shows average levels for the entire span of each period. Data for yields on Aaa newly issued corporate bonds are First National City Bank estimates and data for high-employment budget surplus (NIA basis) are unpublished estimates by the Division of Research and Statistics at the Federal Reserve.

ing most of the period under review. To facilitate comparisons between long- and short-term rates on debt of comparable quality, the short-term rate used in the analysis is the rate on commercial paper.

2. Sketch of Subperiods

The relevant subperiods of rising and falling interest rates can be readily identified in Figure 33.1. The large extent of interest rate stability during the period from early 1964 to mid-1965 has already been mentioned, although on balance, yields did tend to rise slowly during this period. Market yields rose sharply in the next period—from mid-1965 through the so-called “credit crunch” of 1966. As is usually the case, changes in long-term rates were in the same direction as short-term rates but were smaller. Most yields reached their peaks at the height of the credit crunch in the fall of 1966. These interest rate increases partly reflected an unusually rapid pace of economic growth during late 1965 and early 1966. Defense contracts and payrolls mounted quickly, on top of spending demands by private economic sectors that had been stimulated by the income tax cuts of 1964. While the growth rate of real economic activity became less rapid over the course of 1966, readily available manpower and capital resources had been absorbed by that time, and inflationary pressures had set in. To deal with the thrust of these excess demands, monetary policy became restrictive.

The succeeding subperiod of declining interest rates covers the first half of 1967. In this period growth of economic activity slowed briefly, partly in reaction to the earlier credit crunch and a temporary suspension of investment tax credits that took place in late 1966. Interest rate declines were also encouraged by a shift to an expansive monetary policy. In short-term markets, the general rate decline continued through mid-1967, but in bond markets, rates reached their lows as early as February 1967 and then started moving up. This latter upturn was partly anticipatory; it reflected concern among market participants that the income surtax requested by the administration would not be enacted and that this would lead to large federal deficit spending on top of a renewal of strength already expected for the private economy. At the same time, the volume of long-term borrowing—in contrast to short-term financing—increased substantially (see Table 33.3) as borrowers tried to make up for capital market financing forgone during the credit crunch and to anticipate possible future shortages of funds.

Expectations of rising interest rates were in fact confirmed after mid-1967, and rates continued to advance through the next subperiod. Excess demand in the domestic economy and adverse expectations engendered by events in the foreign exchange and gold markets—beginning with the devaluation of sterling in late 1967—were among the factors that encouraged interest rates to rise above the peaks reached earlier during the 1966 credit crunch.

The long-delayed passage of the Revenue and Expenditure Control Act in June 1968—which provided for a 10 percent surcharge on income taxes and a ceiling on federal spending in fiscal year 1969—considerably improved the outlook of credit market participants. A temporary decline in interest rates occurred during the summer and early fall of 1968. As in the first half of 1967, however,

Table 33.3

Net Borrowing in Short- and Long-Term Markets

(selected periods, 1964 to 1971; in billions of dollars at seasonally adjusted annual rates unless otherwise indicated)

Item	Q1 1964– Q2 1965	Q2 1965– Q4 1966	1st H 1967	Q2 1967– Q2 1968	2nd H 1968	Year 1969	Q1 1970– Q1 1971 ^a
Total net borrowing ¹	61.4	62.9	62.8	84.8	96.5	73.4	83.3
Less: Funds supplied by Federal Reserve.....	3.4	3.7	6.0	5.5	-.4	4.2	7.1
Equals: Funds supplied by private sectors:.....	58.0	59.1	56.8	79.3	96.9	69.2	76.2
In short-term markets ²	17.4	27.1	20.5	38.0	36.0	38.9	18.8
In long-term markets—by type of instrument:.....	40.6	32.0	36.3	41.3	60.9	30.3	57.4
Corporate & foreign bonds ³	7.6	10.7	15.9	16.4	15.9	14.8	25.0
Mortgages, net of Govt. housing-credit support....	24.7	20.1	20.9	21.7	25.9	18.7	20.7
State and local bonds.....	5.6	5.7	8.0	5.7	13.0	5.0	10.1
U.S. Govt. and Govt.-sponsored agencies, over 5 years ⁴	2.7	-4.5	-8.4	-2.5	6.1	-8.2	1.5
Share (in per cent) of total supply by private sectors:							
Short-term.....	30.0	45.9	36.1	47.9	37.2	56.2	24.7
Long-term.....	70.0	54.1	63.9	52.1	62.8	43.8	75.3

¹ For derivation, see Table 3.² Includes mainly nonfinancial borrowing in the form of bank loans, consumer credit, open market paper, State and local securities maturing within 1 year, and U.S. Government as well as Govt.-sponsored agency debt maturing within 5 years.³ In addition to bonds issued by nonfinancial sectors, includes bonds issued by sales finance companies and commercial banks. The proceeds of such bond sales by financial sectors are netted out in calculating short-term borrowing on the assumption that the proceeds are used to finance short-term debt.⁴ Abrupt shifts in maturity classification—that arise when securities pass from the over-5-year to the under-5-year category as a result of the passage of time—have been phased in gradually. The smoothing technique spreads the shift over a 2-year period.

SOURCE.—Federal Reserve flow of funds accounts.

^a preliminary.

the rate decline in long-term markets was reversed sooner than that in short-term markets. With borrowers seeking to cover previously delayed financing as credit market conditions eased, the volume of long-term debt offerings expanded sharply (see Table 33.3). In part, this enlarged volume of capital market financing also came about when borrowers sought funds in anticipation of future needs, once it became evident that the mid-1968 fiscal actions were not fully curbing excess spending demands.

During 1969, interest rates moved to new record highs as the sharp increases in rates that had begun in late 1968 continued throughout the year with only minor interruptions. The year 1969 had larger rate increases, both absolutely and in relative terms, than any of the other periods considered here. These rate increases were accompanied by a restrictive monetary policy that resulted in a marked slowdown in the growth rate of bank credit and the monetary aggregates. At the same time, the high-employment federal budget moved into surplus—a process that had already begun after mid-1968. While initially this shift in fiscal policy had seemed to have little effect, it subsequently contributed to the dampening of aggregate demand, and its effect on interest rates was in the direction of moderating upward rate pressures.

Economic expansion came to a halt in late 1969, and the following year was marked by recessive tendencies in output, sales, and employment. This slowdown was counteracted by measures that made fiscal policy more expansive, such as the expiration of the surtax; by a quickening of growth rates in monetary aggregates; and by substantial decreases in interest rates that continued until late winter 1971. All this helped to set the stage for the resumption of economic growth that has been observable in recent months. Although the most dramatic interest rate decreases occurred in the short-term sector, long-term rates also declined significantly during this last period, but only after first climbing farther, to reach new highs toward the middle of 1970—as pressures to rebuild depleted corporate liquidity positions had mounted in the spring of 1970. Thus the declines in long-term rates started much later than those of short-term rates. Also, the levels of long-term rates were still unusually high relative to short-term rates in the spring of 1971.

3. Interest Rates and Credit Market Flows

In explaining interest rate trends over long periods of time, economists usually stress the influence of expected rates of return on investment in physical capital and the willingness of the various economic sectors to supply savings. A consideration of these variables was implicit in some of the preceding discussion of GNP and federal budget developments. However, for short cyclical periods analysts often relate interest rate movements to shifting demand and supply conditions in the credit markets or in the stock of liquid assets such as money.

Evaluating the relationship of interest rate movements in the seven subperiods to changing demand and supply conditions in the credit markets is a complex undertaking. It is difficult to distinguish between shifts in the demand for and shifts in the supply of loanable funds in the *ex post* data on fund flows. For example, an increased volume of credit may at times signify an upward shift in demand for funds that would lead to higher interest rates, whereas at other times an expanded flow of credit may reflect an increased supply that would lead to lower interest rates. Even without a separate identification of demand and supply factors, however, an examination of developments in credit flows may still contribute to an understanding of interest rate behavior.

Total Borrowing

Table 33.4 shows the major borrowing flows at annual rates during the seven subperiods under discussion. Total net borrowing (line F) reflects major types of borrowing by nonfinancial sectors in the economy. Total credit expansion was substantial in all of the subperiods under review, ranging between 7.9 and 10.9 percent of current-dollar GNP. The flows appear to be largest in the periods when the economy was in the early or middle phase of an upswing, as in 1964—

Table 33.4

Borrowing in Major Credit Markets (selected periods, 1964 to 1971; in billions of dollars at seasonally adjusted annual rates unless otherwise indicated)

Line	Item	Q1 1964- Q2 1965	Q3 1965- Q4 1966	1st H 1967	Q3 1967- Q2 1968	2nd H 1968	Year 1969	Q1 1970- Q1 1971 ^p
A	U.S. Govt. securities	5.0	2.8	4.0	20.5	7.2	-3.6	9.2
B	Sponsored credit agencies	1.1	3.8	-3.0	3.3	2.2	8.8	5.7
C	Short-term non-Federal ¹	20.2	21.0	18.3	18.5	33.3	31.4	15.0
D	Long-term non-Federal ²	36.2	38.7	40.7	47.0	56.3	46.0	58.6
E	Less: Govt. housing-credit support ³	1.1	3.5	-2.9	4.5	2.4	9.2	5.2
F	Equals: Total net borrowing by nonfinancial sectors and sponsored credit agencies ⁴	61.4	62.9	62.8	84.8	96.5	73.4	83.3
G	Total borrowing as per cent of GNP ⁵	9.5	8.6	8.1	10.2	10.9	7.9	8.5

¹ Borrowing by nonfinancial sectors in the form of bank loans, consumer credit, open market paper, and State and local securities under 1 year.

² Borrowing by nonfinancial sectors in the form of State and local securities other than short-term, corporate and foreign bonds, and mortgages.

³ Net mortgage purchases of U.S. budget agencies, Federal National Mortgage Association, and Federal land banks; and Federal home loan bank loans to savings and loan associations.

⁴ Borrowing by Government-sponsored credit agencies is included as a component of total borrowing and is shown in line B. However, to the extent that such borrowing finances home mortgage lending it is deducted in line E, since total mortgage borrowing has been included in line D.

⁵ During the last half of 1966, total borrowing amounted to 6.7 per cent of GNP.

SOURCE.—Federal Reserve flow of funds accounts.

^p preliminary.

early 1965 and the two periods from mid-1967 to the end of 1968. Relative to GNP, credit flows were smallest in 1969 and in the latter half of 1966 (see Table 33.4, footnote 5), when the economy was nearing the end of an upswing and when monetary policy was most restrictive.

In the periods when tendencies of recession and incipient recovery were present, as in early 1967 and in the 1970-71 period, credit flows were slightly larger than in the immediately preceding phases of expansion. It may also be noted that the large increase in federal borrowing in fiscal year 1968—at a time of substantial budget deficit at high employment—was reflected in an expansion of total credit flows and was succeeded by an unusually large expansion of nonfederal borrowing in the latter half of 1968.

Given the pattern of relatively small credit flows and rapidly rising interest rates found in the late expansion phase of the business cycle, and intermediate-size credit flows accompanied by falling interest rates in the two periods when the economy slowed substantially, it is apparent that no simple relation can be formulated between the size of total credit flows and movements in interest rates. The explanation would seem to lie in an interaction of supply and demand conditions.

Although total demands for credit tend to shrink when the economy weakens, monetary policy at such times has generally contributed to easier credit supply conditions; hence total borrowing tended to expand even while the economy was still sluggish. Lagged policy effects and the upturn of economic activity have tended to lead to a more rapid increase in total credit flows once economic

Table 33.5

Sectors Supplying Funds in Major Credit Markets (selected periods, 1964 to 1971; in billions of dollars at seasonally adjusted annual rates unless otherwise indicated)

Item	Q1 1964- Q2 1965	Q3 1965- Q4 1966	1st H 1967	Q2 1967- Q2 1968	2nd H 1968	Year 1969	Q1 1970- Q1 1971 ^p
Total net lending (or borrowing) . . .	61.4	62.9	62.8	84.8	96.5	73.4	83.3
Funds supplied directly by:							
Federal Reserve Banks	3.4	3.7	6.0	5.5	- .4	4.2	7.1
Commercial banks, net ¹	23.9	20.7	33.9	32.1	54.1	12.2	34.9
Thrift institutions, net ²	15.2	9.6	16.5	15.4	14.7	10.2	20.3
Foreign ³	.4	.2	2.4	-.6	3.8	-.3	10.9
All other domestic sectors ⁴ . . .	18.5	28.6	4.0	32.4	24.3	47.1	10.1
Share (in per cent) provided by: ⁵							
Federal Reserve, commercial banks, and thrift institu- tions	69.2	54.1	89.8	62.5	70.9	36.2	74.8
All other domestic sectors	30.1	45.5	6.4	38.2	25.2	64.2	12.1

¹ Net of bank borrowing in commercial paper market and securities market. Bank borrowing from foreign branches has not been deducted in evaluating funds supplied by commercial banks.

² Credit market lending by mutual savings banks, savings and loan associations, and credit unions, net of borrowing from commercial banks and Federal home loan banks.

³ Does not include funds lent to U.S. banks by foreign branches, which in the last two periods amounted to \$7.0 and \$-8.0 billion, respectively.

⁴ Mainly reflects private domestic nonfinancial sectors (such as households, business, and State and local funds) and insurance companies as well as minor differences between funds lent and borrowed by finance companies, dealers and brokers, and Government-sponsored agencies.

⁵ The percentages do not add to 100 because the share of foreign net lending has been omitted.

Source: Federal Reserve flow of funds accounts.

^p preliminary.

expansion was well under way. Finally, in the late expansion phases, total borrowing showed declines while interest rates reached high levels, and credit availability was most restricted in reaction to efforts by monetary policy to restrain excess demands.

Sectors Supplying Funds

There is a general association of interest rate movements with the sectoral composition of the supply of funds in credit markets, as discussed below and shown in Table 33.5. In periods when commercial banks, thrift institutions, and the Federal Reserve System supplied the predominant portion of total credit, interest rates eased or tended to be stable. But when other domestic sectors—especially households, nonfinancial business, and state and local governments—had to be attracted into the securities markets to meet borrowers' demands for funds, interest rates increased.

Major shifts of this type in the sources of lending may develop initially from either the demand or the supply side of credit. For example, if demands for credit experience an autonomous increase, market interest rates would tend to rise. Such rate increases on market securities would need to be large enough to attract additional lending from the "other domestic sectors." These higher rate levels

would tend to make market securities more attractive relative to holdings of deposits. Nominal interest rates on demand deposits are fixed at zero, while rates paid on savings accounts at commercial banks and thrift institutions tend to fluctuate much less than rates on market securities, as illustrated in Figure 33.2. Moreover, regulated rate ceilings on time and savings deposits have at times constrained the ability of banks and other depository institutions to offer interest rates on such deposits that are competitive with the market. In the case of depository institutions specializing in mortgage lending, such as savings and loan associations, competitive interest rates often could not be offered on savings accounts when market interest rates rose, since the earnings of these institutions reflected in large part the lower returns obtained on mortgages that had been acquired before the increase in market interest rates.

As a result, the more market interest rates rise, the more extensive the process of "disintermediation" becomes. The recent patterns of Eurodollar borrowings by commercial banks from foreign branches can be viewed as an exception to this generalization. In this case, U.S. commercial banks were bidding aggressively for Eurodollar loans when interest rates rose rapidly in 1969, thus offsetting some of the curtailment of bank credit. But in 1970–71, when U.S. interest rates declined below the levels of foreign rates, banks were repaying large amounts of Eurodollar borrowing.

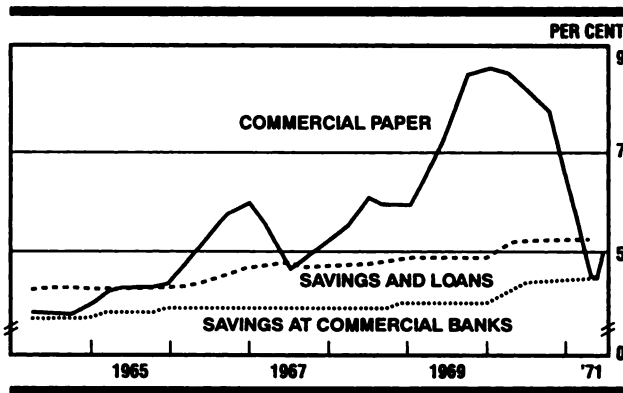
The nonfinancial domestic sectors attracted to the securities markets in periods of rising rates typically acquire a different type of market instrument from those purchased by thrift institutions and banks; therefore, a particular scarcity of funds tends to develop for certain types of loans. Mortgage funds, especially, are not readily provided by the nonfinancial sectors; thus housing credit is curtailed when "disintermediation" occurs. Federal and federally sponsored credit programs have ameliorated some of this unevenness of credit flows, as is indicated by the offsetting fluctuations in the volume of housing-credit-support lending by the government, particularly in periods of general credit restraint, such as in 1969 (see Table 33.4).

Major shifts in the share of lending being provided by different sectors can also be initiated from the supply side. For example, monetary policy can inject more reserves into the banking system, thus fostering more bank credit and in this way exerting downward pressures on interest rates, at least in the short run. The domestic nonfinancial sectors are then encouraged to part with securities and to channel their financial assets into deposits and shares at savings institutions.

4. Short-Term Interest Rates and Monetary Aggregates

The process just described—in which the nonfinancial sectors become important direct lenders in credit markets when interest rates are rising and high, while banks and savings institutions become more predominant in supplying credit funds when rates are falling and low—is reflected for the most part in move-

Figure 33.2 Rates on SAVINGS ACCOUNTS Respond Very Slowly to Market Rates



Quarterly data, except monthly for commercial paper and savings at commercial banks in April and May 1971. Weighted average offering rates on savings and loan accounts estimated by Federal Reserve from the FHLBB quarterly survey. Weighted average interest rates paid on savings deposits by commercial banks in the 7th District.

ments of the monetary aggregates that measure selected sets of liabilities of banks and thrift institutions.

A rough correspondence in movements between measures of credit supplied by banks and thrift institutions and the monetary aggregates is to be expected, since there is a considerable amount of overlap between data taken from the credit side of these institutions' balance sheets and data that represent their major liabilities. However, the monetary aggregates also measure particular types of liquid assets held by the public, and this is the major focus of the various concepts of money stock.

The narrowly defined money stock (M_1)—that is, currency and demand deposits (other than U.S. government and interbank)—has the least direct correspondence to credit data on the asset side of the balance sheet, since commercial bank time and savings deposits constitute a major share of the total liabilities of the banking system. However, since the narrowly defined money stock has the special characteristic of comprising the generally accepted medium of exchange, economists have been particularly interested in investigating the association between this type of liquid asset and other economic magnitudes.

Short-term market interest rates are frequently considered as the opportunity cost of holding or obtaining money, both for potential financial investors and for borrowers. Borrowers have to pay this rate as the price for money, and lenders can earn this rate if they are willing to give up money. Since short-term debt instruments are relatively free of market price risk, they are also considered "liquid" and hence are good money substitutes.

For some types of investors, however, savings accounts may be better substi-

Table 33.6

Changes in the Income Velocity of Money and Short-Term Interest Rate Movements

Time period	Velocity of M_1 ¹	Rate of increase in velocity ²	Movement in short-term interest rates
Q4 1963.....	3.95		
Q1 1964-Q2 1965..	4.16	3.5	slightly increasing
Q3 1965-Q4 1966..	4.50	5.5	increasing
1st H 1967.....	4.46	-.2	decreasing
Q3 1967-Q2 1968..	4.55	2.0	increasing
2nd H 1968.....	4.55	...	about unchanged
Year 1969.....	4.68	2.9	increasing
Q1 1970-Q1 1971..	4.70	.3	decreasing
Q4 1963-Q1 1971..	4.70	2.4	slightly increasing

¹ Terminal quarter GNP, at annual rates, divided by average stock of currency and demand deposits for that quarter.

² Percentage change at annual rate.

tutes for M_1 than are market securities. A 1968 FDIC survey showed that 35 percent of the dollar amount of demand deposits held by individuals, partnerships, and corporations were in accounts smaller than \$10,000; for many of these holders, savings accounts would tend to be a more realistic alternative to demand deposit holdings than short-term marketable instruments. Rates on savings accounts for these holders would be a better measure of the cost of holding money than the yields on short-term market securities.

The public's demand for money balances can be thought of as depending on transaction needs and interest rate levels as well as on a number of other specific influences, some of which are difficult to isolate and will not be considered here. Transaction needs can be represented in a very rough fashion by the current-dollar value of GNP, on the simplifying assumption that financial and intermediate transactions that are not included in GNP would tend to grow at a similar rate to GNP. When GNP is divided by the current stock of money, the "income velocity" of money is obtained, and this velocity ratio then provides some rough allowance for the volume of transactions for which money is used. Data for money velocity, as shown in Table 33.6, permit a direct examination of the relationship between money stock and interest rates.

When velocity increased substantially, during the subperiods in Table 33.6, short-term interest rates were tending to increase also. In periods when velocity increased only moderately, remained unchanged, or declined, short-term interest rates remained about unchanged or tended to fall. During the entire period from the end of 1963 to the first quarter of 1971, velocity increased at an annual rate of 2.4 percent, but short-term interest rates at their recent lows were only slightly higher than in late 1963. This may indicate, in a rough manner, that there were some economies in the use of money over this period so that some of the increasing trend in velocity could represent efficiencies in the management of

cash balances. Alternatively, some of the increasing trend in velocity could also reflect the general rise in the interest rates paid on time and savings accounts.

It should be noted that the relationships among GNP, money stock, and short-term interest rates represent complex interactions. All of these three variables act on one another rather than having only bilateral relationships. Growth in the money stock has a short-run effect in reducing interest rates, making credit more easily available and making the asset holdings of the public more liquid. These effects stimulate transactions and GNP. The larger GNP—whether in the form of additional product or higher prices—in turn increases interest rates and money demand.

Of course, the presentation in Table 33.6 has been oversimplified in many respects. Lagged relationships have been neglected, although most econometric work has found that actions by holders of money to adjust their balances lag behind growth in the volume of transactions as well as changes in interest rates. Table 33.6 thus is merely illustrative of a general approach taken in investigating the relationship between money stock and interest rates.

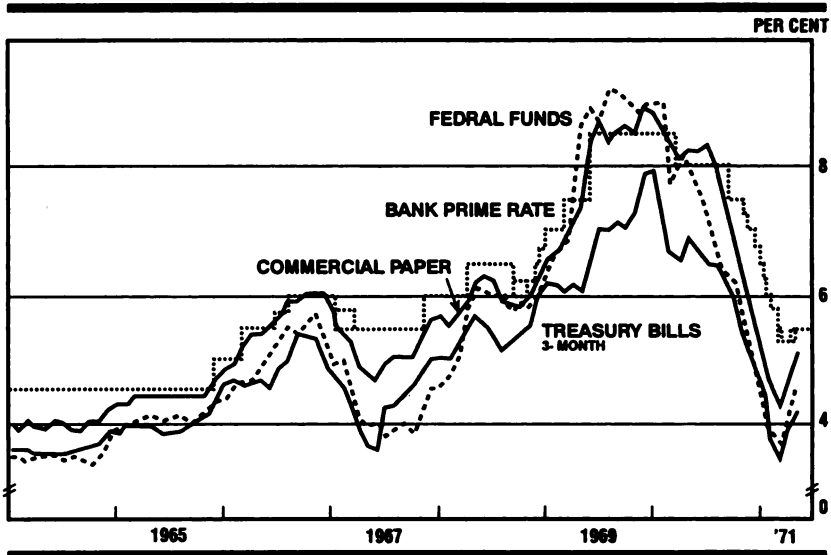
Expectations represent still other factors that influence the demand for money and short-term interest rates. For instance, expectations about economic developments or about monetary policy influence short-term rates. The strong reaction sometimes observable in short-term rates to changes in the Federal Reserve discount rate, for example, takes place largely because a discount rate change may at times be viewed by the market as an indicator of the likely future course of monetary policy.

Inflationary expectations, however, have a smaller impact on short-term rates than on long-term interest rates. To the extent that large investors consider deposit holdings and short-term marketable instruments as their major alternatives for the placement of liquid reserves, neither of these alternative holdings offers protection against inflation. Thus the influence of inflation on short-term interest rates is exerted mainly by the expansion of the current dollar value of transactions rather than by changing the incentives to substitute between deposits and short-term securities.

5. Movements in Long-Term Interest Rates

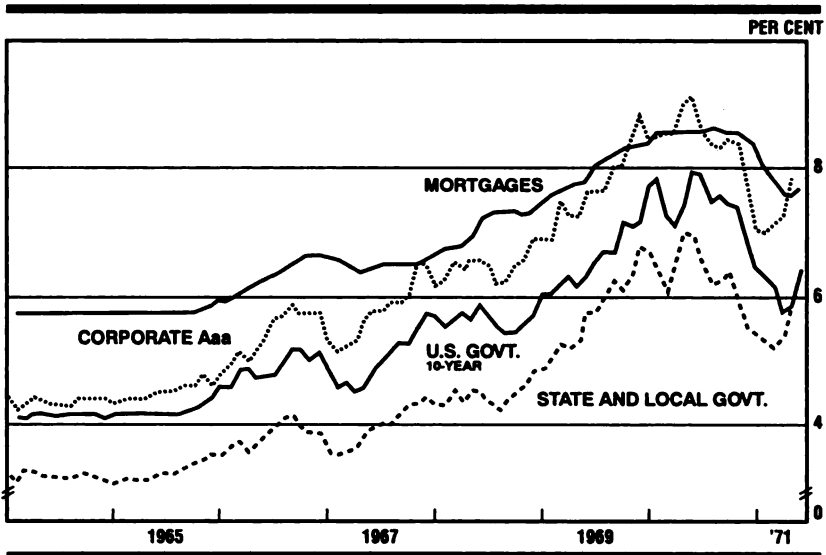
On the average, the level of long-term rates has been historically somewhat higher than that of short-term rates due to a preference for liquidity by lenders. In general, long-term market rates have tended to move in the same direction as short-term rates, but the amplitude of change of long-term rates has been smaller. As a result of the greater volatility of short-term rates, long-term rates for instruments that are similar in all respects except maturity have frequently been below the corresponding short-term rates during periods when interest rates were at cyclical peaks, and have been substantially higher than short-term rates when interest rates were unusually low.

Figure 33.3 Broad Conformity of Movement Appears Despite Diversities in SHORT-TERM RATES



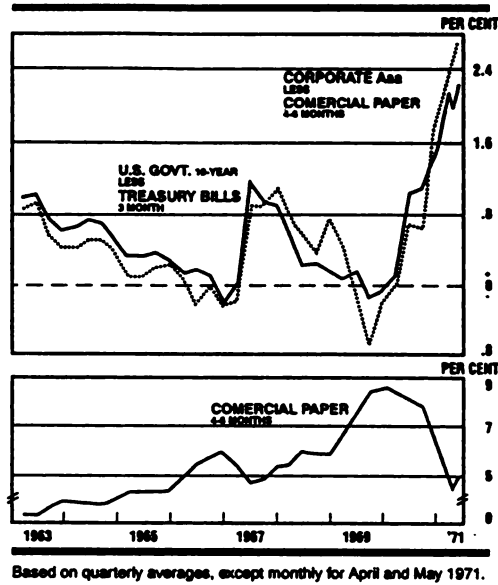
Monthly averages except for bank prime rate.

Figure 33.4 LONG-TERM RATES Exhibit a Common Trend



Monthly averages. Seasoned State and local govt. bonds (20 issues, mixed quality), Bond Buyer; FHA series (new homes) on average contract interest rates on conventional first mortgages in primary markets; U.S. Govt. security yields as estimated from yield curve.

Figure 33.5 SPREADS Between Long- and Short-Term Rates ALTER OVER TIME

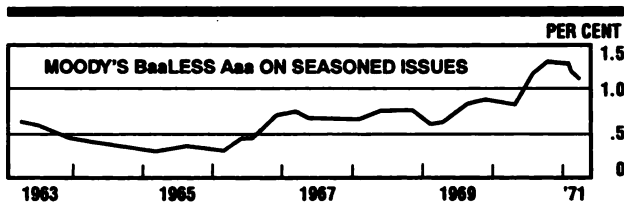


This standard pattern of relationships between long- and short-term rates prevailed in the period from 1963 to late 1966. As shown in Figure 33.5, the spreads between long- and short-term rates declined significantly during this period as short-term rates were rising. Thereafter, however, the standard relationship did not hold up well. Long-term yields remained higher than short-term interest rates in mid-1968, even though short-term rates had reached a new peak. In 1970 and early 1971, when short-term interest rates were falling, some of the large increase in yield spreads did conform to the usual relationships between long-term and short-term rates. However, the extent to which spreads have widened has been unusually large. In summary, it would seem that long-term rates have had an upward shift relative to short-term rates since early 1967 in comparison to their usual historical relationship.

The wider spread between short- and long-term rates in recent years is frequently attributed to changed expectations about the future course of prices of goods and services. When entering into financial contracts that terminate many years hence, lenders and borrowers must naturally make some evaluation of the range of possible alternatives over the life of the contract. In making such evaluations during the past few years, investors appear to have become more concerned about expected general price increases. When such concerns are strong, investors believe it to be unprofitable to advance funds to bond markets except at high yields.

The pattern of credit demands by borrowers is, of course, also influenced by

Figure 33.6 LOWER-GRADE BONDS Still Demand Sizable Yield Premiums



Based on quarterly averages, except monthly for April and May 1971.
Composite averages of seasoned bonds compiled by Moody's Investors Service.

expectations. In 1970 and early 1971 large demands for long-term funds by borrowers have contributed to the relatively high levels of long-term yields. As is shown in Table 33.3, the demand for long-term funds has been unusually large in the period from 1970 to early 1971, especially in comparison to the quantity of short-term funds demanded. As was noted earlier, demands in the long-term sectors of the credit market also had increased substantially in early 1967 and late 1968 when interest rates were declining from their preceding peaks. In these earlier periods the declines in interest rates became short-lived: Markets had tightened initially in reaction to backlog and anticipatory borrowing demands in the long-term sector; somewhat later short-term borrowing demands also had increased due to vigorous expansion of the economy that provided full-potential activity and intensified inflationary pressures.

Recent yield behavior suggests that inflationary expectations are probably embedded to a considerable extent in the yield spreads between long- and short-term maturities and to a lesser extent in the level of all interest rates, as already indicated. Investors in short-term marketable assets frequently are anxious to maintain the liquidity of their investment, and there are no good outlets for investment of short-term funds that hedge against inflation. Some long-term investors, however, can find alternative inflation-hedged assets, such as corporate equities and real estate—and can also shift temporarily to short-term assets, when they become apprehensive about the risk of capital losses in the bond markets.

Another feature of current yield spreads is the large difference between the rates on prime- and lower-grade bonds. The yield spread between Baa-rated corporate bonds and Aaa-rated bonds, in the market for seasoned issues, increased since about the time of the filing for bankruptcy of a major railroad last year (see Figure 33.6). These spreads usually increase in periods of economic recession when uncertainty increases; during the most recent months—perhaps as a reaction to the signs of economic recovery—these spreads have narrowed.

BENJAMIN M. FRIEDMAN

Growth and Change in Intermediation, 1945–79

(1980)

[*Note:* The omitted first part of this essay details the economy's increasing tendency toward private debt financing in the post-World War II period.—Ed.]

How have the American financial markets in the postwar period met the changing needs that the economy has placed on them? In any well-developed financial system it is useful to distinguish the liability-issuing and asset-holding activity that takes place directly between nonfinancial participants in the economy, whose respective principal business interests lie elsewhere, from that which takes place through an intermediary whose principal business is financial transactions themselves. In general, changes in how financial markets work to meet the requirements of the nonfinancial economy may represent some combination of changes in the economy's overall degree of intermediation and changes in how the intermediaries go about their business. In fact both aspects together have accounted for changes in the American financial system during the postwar era.

The Advance of Financial Intermediation

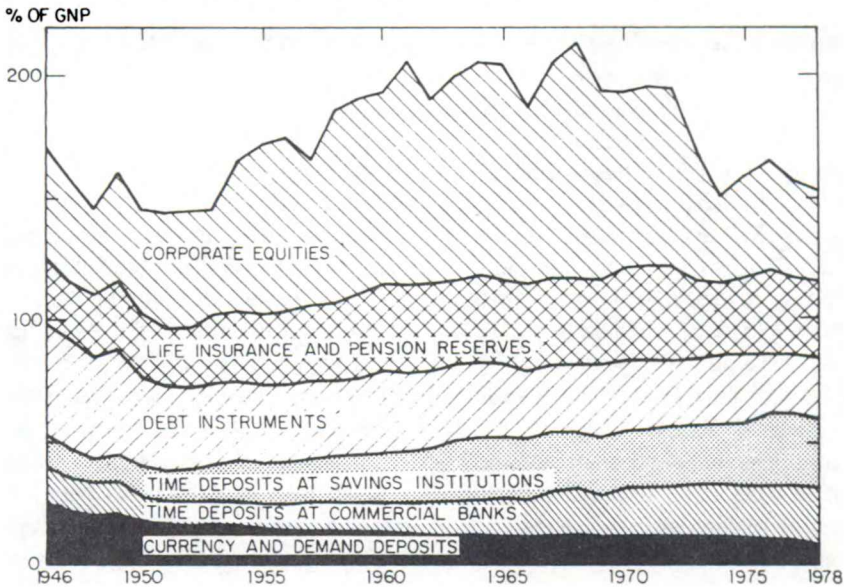
Throughout their history, but more so during the twentieth century and especially in the years since World War II, the American financial markets have undergone a shift away from direct transactions between nonfinancial borrowers and lenders toward the intervention of financial intermediaries. The development of the com-

Excerpted, with permission, from Benjamin M. Friedman, "Postwar Changes in the American Financial Markets," in Martin Feldstein, ed., *The American Economy in Transition* (Chicago: University of Chicago Press, 1980), 35–53, 71–72; ©1980 by the National Bureau of Economic Research. The extensive footnotes and references have been omitted.

mercial banking system and of the life insurance industry in earlier years, and more recently the great expansion of nonbank deposit institutions and both private and public sector pension funds, have been important features of the development of the American financial system.

In the postwar period the continuation and even acceleration of the trend toward intermediated financial markets has hardly been independent of the simultaneous rise in the economy's reliance on privately issued debt. Instead, the two developments have been natural counterparts. In comparison with default-free government obligations, risky private securities impose both information and transaction costs that encourage the economy's development of financial intermediaries. Holders (or potential holders) of private securities must first discover the specific risks that individual claims against private issuers entail, and then monitor these risks on an ongoing basis. These information costs are especially large in the case of negotiated loans such as home mortgages, consumer credit, and bank loans to businesses. Not only economies of scale but also the advantages of specialization favor delegating this information-gathering and processing function to third parties. An equally important function performed by financial intermediaries holding private securities is the pooling of specific risks. In transforming the direct claims that they hold into the indirect claims that they issue, intermediaries economize on transactions costs so as to facilitate diversification by enabling investors to own interests (indirectly) in a large number of imperfectly divisible assets. In addition, by pooling many individuals' and businesses' needs for liquidity, deposit intermediaries often change the risk characteristics of the aggregate of assets to be held by issuing claims (often explicit or implicit demand claims) that have a shorter maturity than the claims that they in turn hold. Similarly, pension and insurance intermediaries change the aggregate risk structure that insured parties face by pooling actuarial risks.

Individuals are the principal *nonfinancial* holders of assets that represent direct claims on other nonfinancial participants in the economy. Individuals' continued willingness to hold such assets therefore constitutes a retardant to the advance of financial intermediation, while their reluctance to perform this function creates the basic need for intermediation. Figure 34.1 shows how American households have shifted the composition of their financial asset portfolios during the postwar period. Households' aggregate holdings of deposit-type liabilities of financial intermediaries have grown continually from the early 1950s to the late 1970s, not only absolutely but also in relation to overall nonfinancial economic activity (and personal income). Households' claims on insurance and pension reserves have also grown on balance during the postwar years, although here the growth has been less steady because of the effect of equity price changes on the valuation of these reserves. By contrast, households' direct holdings of non-intermediated debt have declined in relative terms almost continually since World War II, and their direct holdings of equity claims on business corporations have varied mostly with equity price fluctuations, exhibiting little overall relative

Figure 34.1 Financial Asset Holdings of United States Households

trend. Since the total size of households' financial asset portfolios in relation to gross national product has also shown no overall trend—first declining during the immediate postwar years, then rising sharply in the 1950s, remaining steady through the 1960s, and declining in the 1970s—these patterns of growth and decline in comparison to gross national product also correspond, for the postwar period as a whole, to growth or decline in shares of households' total portfolio.

Households' increasing preference for claims on intermediaries has appeared even more pronounced from the perspective of their accumulation of financial assets. Table 34.1 shows households' net acquisition of various categories of financial assets, both in dollars and as a share of the total. The two features of households' investment behavior that stand out most sharply here are the dominance of deposits throughout the postwar period and the change that took place at the end of the 1950s in households' net investment in corporate equities. Households purchased more equity shares in corporations than they sold in every year during 1946–57, so that the tripling in value of their direct equity holdings over this period represented the combined result of capital gains and positive net purchases. By contrast, households have sold more direct equity shares than they have purchased in every year since 1958, so that capital gains have accounted for more than all of the subsequent increase in total value of their direct equity holdings. Moreover, allowing for the shift from direct ownership of equities to indirect ownership via mutual funds does not alter the fundamental picture of individuals' investment behavior. Households in the aggregate were net purchasers of mutual fund shares during the rise of that industry in the 1960s, but not in

sufficient quantity to offset the liquidation of their direct equity holdings. More recently, they have been net sellers of both direct equity holdings and mutual fund shares in every year since 1972. The conclusion remains that equity price movements have accounted for more than all of any increase in the value of individuals' equity holdings. Because equity prices have fluctuated widely but shown little net gain in nominal terms since the mid-1960s, individuals' aggregate equity portfolio has therefore shown no trend movement in nominal value and has declined in relative value during the past decade and more.

The shift of individuals' investment flows away from equities during the second half of the postwar period probably reflects several considerations in addition to the economies of scale and risk pooling noted above as general advantages of intermediation. Changing birth rates, age distributions, and income levels have all played some role. The increasing government provision of health, education, and income security benefits has also altered the objectives associated with saving for many people. The growing importance of workers' claims on future pension benefits, including job-specific pensions in both the private and public sectors and also social security, has in particular changed many people's need to accumulate assets directly to finance their retirement. Finally, perceptions of the relative returns and risks—including especially inflation risk—associated with different assets have also changed markedly during the postwar period. After the unpegging of bond prices in 1951, fixed-income securities became subject to market risk in addition to inflation risk, and in the 1970s the inflation risk has increased dramatically. As for equities, during most of the 1950s and 1960s, renewed confidence in economic stability and prosperity lessened fears of any collapse of values comparable to that of 1929–33, and in addition many people regarded them as a “hedge” against price inflation. Following the rapid acceleration of inflation and the poor performance of both equity prices and the American economy in the 1970s, however, prevailing opinion has become progressively more skeptical both of the economy's long-run growth prospects and of the usefulness of equities as an inflation hedge. As the correlations presented in Table 34.2 show, even during the 1950s and 1960s nominal returns on equities never compensated fully for variations in price inflation. Even so, the table also shows that there has been a noticeable shift in the structure of asset returns and risks in the 1970s.

Although individuals are the dominant nonfinancial holders of direct claims on other nonfinancial participants in the economy, businesses also advance a substantial amount of direct credit, both to individuals in the form of installment and other consumer credit, and to each other in the form of trade credit and commercial paper. Even with the ready availability of business credit cards and charge accounts, however, commercial banks and finance companies have increasingly dominated the consumer credit field. The share of outstanding consumer credit owed to nonfinancial businesses (including corporations and others) has fallen from just over one-third in the early 1950s to just under one-sixth in

Table 34.1

Net Acquisitions of Financial Assets by United States Households

	Total Assets	Currency and Deposits	Equities			Credit Market Debt	Life Insurance and Pension Reserves	Other
			Total	Investment Company Shares	Direct Holdings			
Billions of Dollars								
1946-50	14.3	3.4	1.0	0.2	0.7	1.2	5.7	3.1
1951-55	21.8	9.7	1.2	0.5	0.7	3.3	7.6	-0.2
1956-60	29.8	13.0	1.0	1.4	- 0.4	6.5	10.6	-1.3
1961-65	46.9	27.8	-1.3	2.1	- 3.4	5.2	14.3	0.8
1966-70	68.4	33.5	-3.3	4.1	- 7.3	15.2	20.6	2.4
1971-75	129.4	79.3	-4.6	-0.2	- 4.4	23.2	34.0	-2.4
1976-78	218.4	126.5	-5.2	-1.0	- 4.2	39.1	65.3	-7.3
Percentage of Total Net Acquisitions								
1946-50	100.0	23.9	6.4	1.6	4.8	8.1	39.9	21.7
1951-55	100.0	44.5	5.7	2.3	3.4	15.3	35.1	-0.7
1956-60	100.0	43.7	3.5	4.7	- 1.2	21.8	35.5	-4.5
1961-65	100.0	59.4	-2.7	4.6	- 7.3	11.0	30.6	1.8
1966-70	100.0	48.9	-4.8	6.0	-10.7	22.2	30.1	3.5
1971-75	100.0	61.3	-3.6	-0.2	- 3.4	17.9	26.2	-1.9
1976-78	100.0	57.9	-2.4	-0.4	- 1.9	17.9	29.9	-3.4

Source: Board of Governors of the Federal Reserve System.

Notes: Data are averages of annual flows, in dollars and as percentages of annual total net acquisitions. Detail may not add to totals because of rounding.

Table 34.2

Asset Returns and Price Inflation

	After-Inflation Total Returns			
	1-Month Bills	20-Year Bonds	Equities	Inflation
<i>1953-78</i>				
Mean	0.41	-0.52	7.09	3.69
Standard deviation	1.41	6.89	20.13	3.12
Correlation with inflation	-0.88	-0.40	-0.61	1.00
<i>1953-72 Subperiod</i>				
Mean	1.02	0.18	10.48	2.36
Standard deviation	0.69	6.59	18.19	1.73
Correlation with inflation	-0.44	-0.30	-0.56	1.00
<i>1972-78 Subperiod</i>				
Mean	-1.62	-2.83	-4.19	8.10
Standard deviation	1.29	8.00	23.87	2.53
Correlation with inflation	-0.97	-0.72	-0.77	1.00

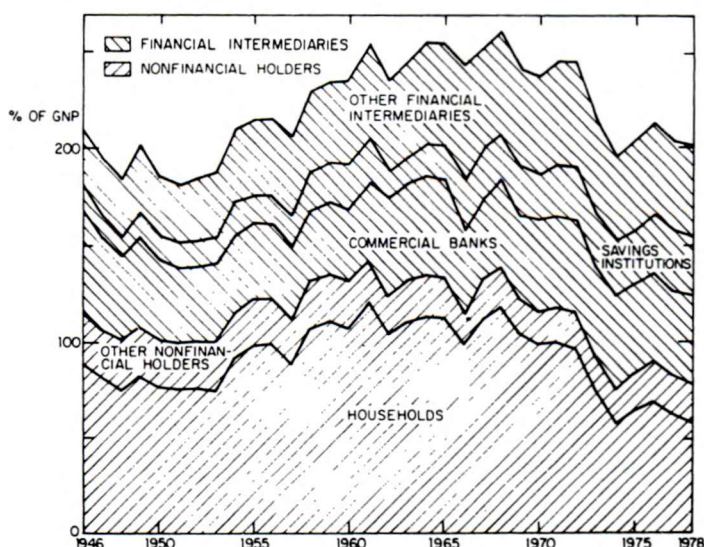
Note: Data in percentages per annum.

the 1970s. In addition, business lending via purchases of nonfinancial commercial paper has remained relatively small, so that trade credit—typically equal to 15–18 percent of the gross national product, and mostly borrowed and lent within the corporate sector—remains the primary vehicle for businesses' holdings of direct claims on nonfinancial obligors.

Foreign investors have held a small but growing share of direct claims on nonfinancial participants in the American economy throughout the postwar period. The growth of foreign holdings has been especially rapid during the 1970s, as the persistent American balance of payments deficit has transferred assets abroad, especially to member countries of the international oil cartel. The rapid recent growth has proceeded from a small base, however, so that foreign holdings still represented fewer than 5 percent of all direct claims against American nonfinancial obligors as of year-end 1978. Nevertheless, the concentration of foreign (especially foreign official) investments in specific instruments has made foreign holdings of particular importance in some American markets. The year-end 1978 share of federal government securities held abroad, for example, was nearly one-sixth.

Figure 34.2 indicates the extent to which the increasing preference for claims on intermediaries by individuals (and, to a lesser extent, other nonfinancial investors) has shifted to intermediaries the task of meeting the needs that nonfinancial participants in the economy have brought to the American financial markets. As of 1978, individuals in the aggregate remained the largest single class of holders of direct claims on nonfinancial borrowers and share issuers—but only by virtue of their continuing domination of the ownership of corporate equities.

Figure 34.2 Holdings of Claims Against United States Nonfinancial Sectors (Including Equities)



Because the direct claims that individuals hold consist overwhelmingly of equities (see again Figure 34.1), the household share of ownership of the total of direct claims outstanding has varied with fluctuations in equity prices. Overall, however, the household share has declined, as has the share held by all other nonfinancial investors. As the share of direct claims on nonfinancial entities held by all nonfinancial investors has declined, the share held by financial intermediaries has correspondingly risen. Intermediaries' holdings first accounted for the majority of all direct claims outstanding in the American financial markets in 1969, and they have remained the majority ever since.

Table 34.3 presents flow data indicating the even stronger postwar dominance of intermediaries in meeting the funds required each year by nonfinancial participants in the economy. Here the main difference from the pattern indicated in Figure 34.2 is that these data exclude equity capital gains, which constituted most of the increase in households' equity holdings until the late 1960s and more than all of the increase since then. Apart from accumulating capital gains on equities, individuals and other private domestic nonfinancial investors have played only a small and shrinking role in meeting directly the needs that nonfinancial entities have brought to the financial markets. In large part because of the growing fraction of those needs that have come in the form of debt issued by private borrowers, nonfinancial investors have instead accumulated claims on intermediaries and have left to them the task of directly allocating the economy's financial resources.

Table 34.3

United States Credit Market Funds Advanced to Nonfinancial Sectors

Years	Private Domestic		Federal Government	Foreign	Total	Financial Intermediaries			
	Total	Nonfinancial Investors				Commercial Banks	Savings Institutions	Other	
Billions of Dollars									
1946-50	14.2	2.3	1.3	0.1	10.5	1.3	2.7	6.5	
1951-55	31.4	5.8	1.7	0.7	23.1	6.6	5.8	10.8	
1956-60	40.4	6.8	2.0	1.3	30.4	7.7	8.8	14.0	
1961-65	63.1	1.5	5.1	1.0	55.7	20.7	15.0	20.0	
1966-70	94.4	9.7	8.6	2.2	73.8	29.4	14.3	30.1	
1971-75	189.0	18.3	14.0	10.4	146.3	60.3	40.2	45.7	
1976-78	338.1	26.7	23.5	30.8	257.1	92.0	76.4	88.7	
Percentage of Total Funds Advanced									
1946-50	100.0	16.2	9.2	0.6	74.0	9.1	19.2	45.6	
1951-55	100.0	18.5	5.4	2.3	73.7	20.9	18.4	34.4	
1956-60	100.0	16.9	4.7	3.2	75.2	19.0	21.7	34.4	
1961-65	100.0	2.3	8.0	1.4	88.2	32.8	23.7	31.7	
1966-70	100.0	10.3	9.1	2.4	78.2	31.2	15.1	31.9	
1971-75	100.0	9.7	7.4	5.5	77.4	31.9	21.3	24.2	
1976-78	100.0	7.9	7.0	9.1	76.0	27.2	22.6	26.2	

Source: Board of Governors of the Federal Reserve System.

Notes: Data are averages of annual flows, in dollars and as percentages of annual total funds advanced. Detail may not add to totals because of rounding.

The Role of Specific Intermediaries

The advance of intermediation in the postwar period has hardly been uniform. The specialization of American financial intermediaries has inevitably led to some playing more important roles than others, and some experiencing more rapid growth than others, as the needs and objectives of both borrowers and lenders have changed and as government interventions have (intentionally or otherwise) favored first one kind of institution and then another.

Commercial Banks

The commercial banking system has long stood at the center of economists' interest in financial markets. Even today, despite nearly two decades of increasing emphasis on nonbank intermediaries in financial economics research, discussions ranging from textbook descriptions of the economy to professional evaluations of monetary policy often proceed as if commercial banks were the only intermediaries in the financial markets. This emphasis on the commercial banking system is understandable in part, in view of the special role that banks play in the monetary policy process by virtue of their relationship to the Federal Reserve System. In addition, in the past commercial banks were more dominant in financial market activity than they are today. Before World War II, banks' assets and liabilities dwarfed those of other intermediaries, and before passage of the Glass-Steagall Act in 1933, commercial banks also dominated the American securities business. Until as recently as the early 1970s, commercial banks enjoyed a monopoly on the right to issue checkable deposits.

Since World War II the American commercial banking system has approximately held its own in relation to the scale of nonfinancial economic activity, but it has not participated in the economy's overall postwar expansion of intermediation. The approximate stability of the banking system's relative size is apparent in Figure 34.2, and also in the data on commercial banks' assets and liabilities presented in Table 34.4. The total size of the banking system in relation to gross national product has shown essentially no trend during the postwar period. Put the other way around, as Figure 34.3 shows, there has been little postwar trend in the income velocity of the broad *M2* money stock, which consists of most commercial bank deposit liabilities (plus the public's currency holdings), or in the corresponding income velocity of bank credit, which consists of most commercial bank earning assets. This relative stability (actually a slow decline) in the postwar period stands in marked contrast to the prewar years when, over nearly a century, the size of the banking system continually grew in relation to the gross national product.

Within the stability of the overall totals, however, the postwar years have also seen substantial shifts in composition on both sides of the banking system's balance sheet. Among bank assets, the most significant development of the post-

Table 34.4

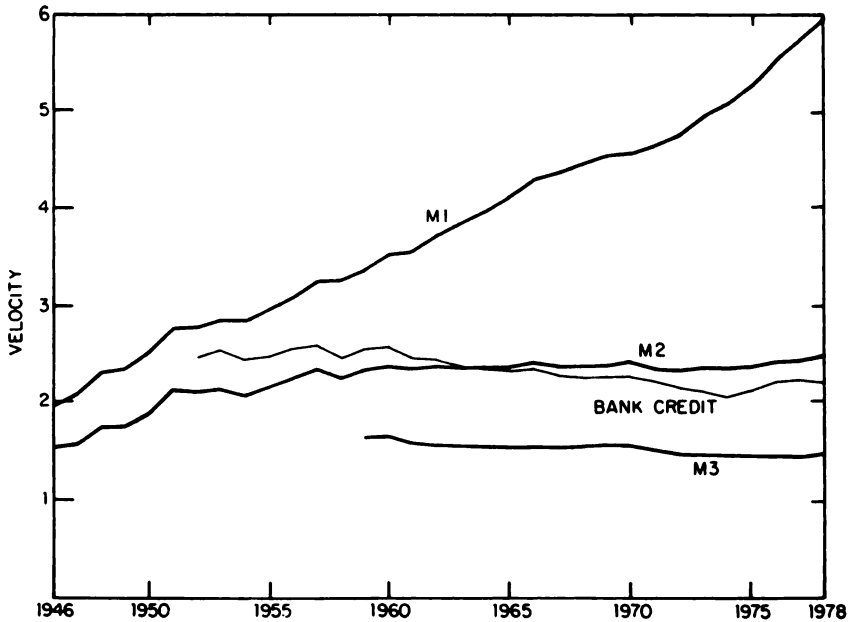
Assets and Liabilities of United States Commercial Banks

Years	Financial Assets				Financial Liabilities			
	Total	Treasury Debt	Government Agency Debt	State and Local Debt	Loans	Total	Demand Deposits	Non-CD Time Deposits
					<i>Percentage of GNP</i>			
1946-50	54.8	26.7	0.6	2.3	16.0	51.1	35.4	14.0
1951-55	47.1	17.5	0.8	3.0	18.6	43.8	29.6	12.0
1956-60	45.1	13.2	0.5	3.4	22.2	41.6	25.8	13.3
1961-65	47.0	10.6	0.7	4.8	26.1	43.5	22.6	16.6
1966-70	49.1	6.9	1.1	6.3	30.1	46.0	19.4	19.7
1971-75	52.7	5.0	2.0	7.1	34.0	49.7	17.1	22.3
1976-78	50.5	5.1	2.0	5.8	33.6	47.5	14.0	23.3
					<i>Percentage of Total Financial Assets</i>			
1946-50	100.0	48.3	1.1	4.3	29.5	93.2	64.6	25.4
1951-55	100.0	37.1	1.6	6.5	39.6	93.0	62.8	25.6
1956-60	100.0	29.1	1.1	7.5	49.4	92.3	57.1	29.7
1961-65	100.0	22.2	1.6	10.3	55.8	92.7	47.8	35.5
1966-70	100.0	14.0	2.3	12.8	61.4	93.6	39.4	40.1
1971-75	100.0	9.4	3.9	13.3	64.6	94.3	32.1	42.3
1976-78	100.0	10.0	3.9	11.5	66.8	94.1	27.7	46.0

Source: Board of Governors of the Federal Reserve System.

Notes: Data are averages of year-end amounts, as percentages of annual gross national product and as percentages of annual total assets. Detail may not add to totals because of rounding.

Figure 34.3 Income Velocities of Monetary and Credit Aggregates



war period has been the recovery of bank loan portfolios and hence the general resumption of banks' traditional role as "inside" intermediaries. In 1929 loans constituted 73 percent of bank credit. During the depression and then the war years, however, the falloff in private debt issuing meant that, for all practical purposes, there was little or no loan business to be had. By contrast, the federal government was then issuing debt in record volume, and banks participated in financing it. By 1935 banks' securities investments exceeded their loan portfolios, and in 1945 investments constituted 79 percent of bank credit. Commercial banks simply were no longer very commercial. The years since 1946 have largely consisted of a reversal of the 1930-45 pattern, with bank loans exceeding securities investments in 1957 for the first time in more than two decades and reaching 73 percent of total bank credit as of year-end 1978.

In rebuilding their loan portfolios and deemphasizing their investments, banks have also both altered the mix of their lending business and changed the character of their securities holdings. Although banks remain a principal source of business credit, and commercial and industrial loans are still the largest single category of bank lending, they no longer dominate bank loan portfolios as they once did. Instead, mortgage credit and other consumer loans now comprise nearly one-third of the total. Especially during the second half of the postwar period, the widespread use of bank-issued credit cards has been a major factor in banks' development of their consumer lending business. Moreover, among business loans per se, the larger banks have increasingly become a major factor in the

intermediate-term credit market through the use of explicitly longer maturity loans (in some cases up to ten years) and revolving credits of an implicitly ongoing nature. Total bank investments have grown slowly since World War II, but because of tax incentives banks have so concentrated their investments on state and local government issues that, for a few years in the early 1970s, they held more of these securities than of federal government debt.

Among bank liabilities, the two most significant changes that have occurred during the postwar period have been the continual decline of demand balances and the increase in time and savings deposits, relative to either total bank liabilities or gross national product, and the "liability management revolution" that has greatly increased the larger banks' reliance on "bought funds." As Figure 34.3 shows, the income velocity of the narrow *M1* money stock, consisting of currency plus demand deposits, has about tripled over the postwar years as a result of a combination of influences including economies of scale in the public's holding of cash balances, the secular rise in nominal interest rates, and the increasingly widespread use of credit cards and charge accounts. This persistent trend in *M1* velocity stands in sharp contrast to either the absence of any trend during 1910–30 or the steeply declining trend during 1930–45. Hence only the strong growth of time and savings deposits, including the new negotiable certificates of deposit that first came into existence in 1961, has accounted for the much slower postwar increase in the income velocity of *M2*. Large banks' growing use of such liabilities as certificates of deposit, federal funds, Eurodollar borrowings, commercial paper issues, repurchase agreements, and so on—instruments that in some cases represent the development of new financial markets since World War II—has not only changed banks' balance sheets but also facilitated a major change in the feasible aggressiveness of bank lending practices. The enormous postwar expansion of bank loan portfolios, which banks have achieved in part through the competitive use of such devices as loan commitments and medium-term credits, would probably have been impossible if banks had simply continued to follow the classic practice of treating their deposits (and other liabilities) as determined by outside forces.

Finally, it is useful to point out explicitly that because of changes in commercial bank organization, especially during the 1960s, the representation of banks as having merely held their own during the postwar increase in the American economy's degree of financial intermediation relative to economic activity risks understating by a wide margin the growing overall presence of commercial banks in the financial system. After falling by more than one-half between 1920 and 1935, the number of American commercial banks has remained roughly steady at about 14,000. The number of bank branches, however, has risen from some 4,000 to more than 32,000 during the postwar years, with most of this growth occurring since 1960. Moreover, especially since the 1970 Amendments to the Bank Holding Company Act, banks have increasingly gone into activities other than their traditional loan and deposit business. Although their direct par-

ticipation in financial intermediation has not kept pace with the rising postwar trend, commercial banks have increasingly enhanced their importance as more nearly full-service financial institutions.

Nonbank Deposit Institutions

As is clear from Figure 34.2, one group of intermediaries that has accounted for much of the postwar increase in American financial intermediation has been nonbank deposit institutions, including savings and loan associations, mutual savings banks, and credit unions. The public's strong demand for consumer-type time and savings deposits has kept these institutions growing rapidly, not just absolutely but also in relation to economic activity, during most of the postwar period. In fact, as Figure 34.3 shows, their growth has even been great enough to offset the relative decline of the commercial banking system, so that the income velocity of the *M3* money stock, consisting of *M2* plus nonbank deposits, has shown a modest downward trend since the beginning of the data series in 1959. Moreover, when extrapolated backward, this trend appears to have been a continuation of the downward trend associated with *M2* during the prewar era, when nonbank deposit institutions were not of major importance.

Table 34.5 presents data for the individual deposit (or share) volume and combined asset holdings of the three major groups of nonbank deposit institutions, first in relation to gross national product and then as a share of the total assets of the three groups of institutions together. The vast postwar expansion of the savings and loan industry stands out clearly here. Between the early postwar years and the 1970s, outstanding savings and loan shares more than quadrupled as a percentage of the gross national product. By 1978 the amount of these shares equaled more than twice the amount of mutual savings bank deposits and credit union shares combined, and also equaled about five-sixths of the amount of consumer-type time and savings deposits held at commercial banks. In comparison with mutual savings banks, the primary factor underlying the more rapid growth of savings and loan associations has probably been mere geography; mutual savings banks are overwhelmingly concentrated in a few states, especially New York and Massachusetts, which have experienced slower than average economic growth during the postwar period. In comparison with commercial banks, the primary factor has probably been the effect of government regulation, in that savings and loan associations did not face deposit interest rate ceilings until 1965 and have enjoyed a 0.25 percent differential over commercial banks since then. The growth of credit unions has been even faster than that of savings and loan associations, but credit unions constitute another example of rapid growth from a small base, and they remain by far the smallest of the three groups of institutions. Mutual savings banks are alone among the three groups in having failed to do more than grow in pace with economic activity. Although mutual savings banks were twice as large as savings and loan associations at the end of

Table 34.5

Assets and Liabilities of United States Nonbank Deposit Institutions

Years	Combined Financial Assets			Liabilities by Sector		
	Total	Mortgages	Consumer Credit	Savings and Loan Shares	Mutual Savings Banks	Credit Union
					Deposits	Shares
Percentage of GNP						
1946-50	13.4	6.3	0.3	4.7	7.2	0.2
1951-55	15.3	9.7	0.5	6.9	6.6	0.5
1956-60	21.0	15.0	1.0	11.1	7.1	0.8
1961-65	26.9	20.5	1.3	16.0	7.3	1.2
1966-70	27.0	20.9	1.6	16.2	7.2	1.4
1971-75	30.2	22.3	2.1	18.8	7.2	1.8
1976-78	33.1	23.6	2.6	21.7	6.7	2.3
Percentage of Total Combined Financial Assets						
1946-50	100.0	47.4	2.2	32.3	53.5	1.8
1951-55	100.0	63.4	3.3	41.2	43.0	3.0
1956-60	100.0	71.4	4.4	50.0	33.9	4.0
1961-65	100.0	76.4	5.0	54.7	27.1	4.4
1966-70	100.0	77.3	6.0	54.5	26.6	5.2
1971-75	100.0	73.9	7.0	56.0	23.5	6.2
1976-78	100.0	71.4	8.0	58.4	20.2	7.0

Source: Board of Governors of the Federal Reserve System.

Notes: Data are averages of year-end amounts, as percentages of annual gross national product and as percentages of annual total assets. Detail may not add to totals because of rounding.

World War II, savings and loans were equal in size in 1954 and more than three times as large by 1978.

Because all of these nonbank deposit institutions operate under legal and regulatory constraints governing the disposition of their asset portfolios, their aggregate contribution to meeting the financial needs of nonfinancial participants in the economy has followed a fairly predictable pattern. Savings and loan associations and mutual savings banks typically invest some 80 percent and 70 percent, respectively, of their assets in mortgages, so that these two groups together have become the nation's leading providers of mortgage lending. As of year-end 1978, savings and loans and mutual savings banks together held 45 percent of all outstanding mortgages (in comparison to 18 percent for commercial banks, the next largest class of holders). These institutions are especially

predominant in the market for single-family home mortgages, accounting for 55 percent of year-end 1978 loans outstanding. Credit unions, by contrast, have traditionally invested most of their assets in consumer installment loans, and by 1978 they accounted for 14 percent of the outstanding consumer credit.

As the discussion below emphasizes, the history of American nonbank deposit institutions in the postwar period has been in large part a story of evolving financial regulation, including restrictions on these intermediaries' liability issuing as well as their asset holding. In this context, what may well turn out to be two of the most important changes affecting nonbank financial institutions within the postwar era are only just in progress at the time of writing. The first is the sudden acceleration of the erosion of the deposit interest rate ceilings these institutions have faced since the mid-1960s, following the introduction in mid-1978 of "money market certificates" bearing yields set in relation to those on Treasury bills. Just by late 1979—that is, after fewer than eighteen months—these new deposit certificates accounted for more than one-fourth of all deposits at savings and loan institutions and almost one-fourth those at mutual savings banks. The second change is the expansion of authority to issue interest-bearing checkable deposits, which nonbank deposit institutions and commercial banks in the New England states received in several steps during 1972–76, and the extension of which to the rest of the country is to be decided by Congress in 1980. Both checking account authority and the freedom from deposit interest rate ceilings are likely to increase greatly the demand for claims on nonbank deposit intermediaries, although the impact of the latter on these institutions' cash flows (and even solvency in some cases) makes it a mixed blessing in the short run.

Nondeposit Intermediaries

Finally, as is also apparent from Figure 34.2, a significant part of the postwar increase in the American economy's degree of financial intermediation has stemmed from neither commercial banks nor nonbank deposit institutions but instead from intermediaries that issue only nondeposit claims. There are many forms of such intermediaries operating in the American markets, but the most familiar and important among them include life and casualty insurance companies, private and public sector pension funds, independent consumer finance companies, the "captive" finance companies of nonfinancial businesses, equity and money market mutual funds, real estate investment trusts, and security brokers and dealers.

Table 34.6 presents data analogous to that shown above for the nonbank deposit institutions for three specific categories of nondeposit intermediaries: life insurance companies, private pension funds, and state and local government pension funds. The reason for focusing in particular on these three groups is not only that they are the largest of the nondeposit intermediaries but also that their

Table 34.6

Assets of United States Life Insurance Companies and Pension Funds

Years					Financial Assets by Sector		
	Combined Financial Assets				Life Insurance Companies	Private Pension	State and Local Government Pension
	Total	Equities	Corporate Bonds	Mortgages			
Percentage of GNP							
1946-50	24.6	0.8	8.2	4.3	21.2	1.9	1.4
1951-55	26.3	1.6	10.8	6.5	20.8	3.3	2.2
1956-60	31.8	3.4	13.2	8.3	22.3	6.2	3.3
1961-65	36.0	6.1	14.3	9.1	22.3	9.2	4.5
1966-70	36.8	8.3	14.0	9.0	20.6	10.8	5.4
1971-75	35.1	10.2	12.9	6.7	18.4	10.4	6.4
1976-78	33.3	8.7	12.9	5.5	17.3	9.2	6.8
Percentage of Total Combined Financial Assets							
1946-50	100.0	3.3	33.4	17.4	86.4	7.7	5.9
1951-55	100.0	6.0	41.1	24.9	79.1	12.6	8.3
1956-60	100.0	10.6	41.4	26.1	70.0	19.4	10.5
1961-65	100.0	17.0	39.7	25.3	62.0	25.6	12.4
1966-70	100.0	22.6	38.1	24.3	55.9	29.3	14.8
1971-75	100.0	29.0	36.7	19.6	52.4	29.5	18.1
1976-78	100.0	26.2	38.7	16.5	51.9	27.7	20.4

Source: Board of Governors of the Federal Reserve System.

Notes: Data are averages of year-end amounts, as percentages of annual gross national product and as percentages of annual total assets. Detail may not add to totals because of rounding.

respective postwar experiences reflect some interesting contrasts. Because the low interest rates implicitly paid on the savings component of ordinary life insurance has increasingly favored the use of group and other term insurance policies, life insurance companies' total assets held and liabilities outstanding grew little relative to the gross national product during the first half of the postwar period, and since then they have been declining in relative terms. Moreover, the relative decline in these companies' life insurance business has been even more pronounced, in that their growth in recent years has consisted disproportionately of pension monies which they manage for other businesses. As of year-end 1978, pension reserves constituted nearly one-third of life insurance companies' total liabilities, up from less than one-tenth in the early postwar years.

By contrast, both private and public sector pensions have experienced extraordinarily rapid growth throughout these years. Tax incentives at both the individual and corporate levels, business personnel policies aimed at reducing worker

turnover, features of the collective bargaining process, and other corporate financial objectives have all combined to favor the mushrooming of private pension liabilities since World War II. During most of this period, however, businesses had (and many used) broad latitude to incur pension liabilities without funding them. The 1974 Retirement Income Security Act has subsequently specified minimum standards for the vesting of workers' rights to accumulated pension benefits and for employers' funding of vested pension liabilities. Even so, businesses still have flexibility in choosing the actuarial assumptions underlying the calculation of future benefits, the minimum required amortization of unfunded vested benefits is very low, and nonvested benefits require no funding at all. Consequently, many businesses continue to carry substantial amounts of unfunded liabilities, so that private pension funds' total assets as shown in Table 34.6 substantially understate their liabilities. This understatement has been especially great during the 1970s, when many private pension funds' asset portfolios, of which in the aggregate about two-thirds is invested in equities, have suffered an erosion in market value.

State and local government pensions, including both teachers' and other employees' funds, have experienced similar postwar growth. Public sector workers have the same tax incentive to use the pension mechanism to spread income beyond retirement as do private sector workers. Although public sector employers do not have the same tax incentives as do private businesses, in many cases the political process has probably favored the use of pension compensation over current compensation, especially when there is no pressure to raise tax or other revenues immediately to fund the accumulating pension liabilities. In fact, public sector pension funds have been and remain substantially underfunded, so that the asset data shown in Table 34.6 greatly understate their liabilities also. The continued growth of public sector pensions' assets during the 1970s, in contrast to private pensions, reflects merely the smaller share of assets invested in equities (about one-third in the aggregate) rather than any difference in funding practices.

The asset mix of these insurance and pension intermediaries—and hence their role in financing economic activity—has also undergone important changes since World War II. Regulatory changes in the 1960s allowed many life insurance companies to increase the equity portion of their portfolios, and since the mid-1960s life insurers have largely withdrawn from direct home mortgage lending. State and local government pension funds and especially private pension funds have even more dramatically increased the equity share of their investments. Consequently, these nondeposit intermediaries have increasingly become a major source of both debt and equity funds for corporate businesses. As a result of these portfolio changes, together with the rapid growth of pensions and the relative stagnation of the commercial banking system, insurance companies and pension funds combined have come to dominate banks as holders of claims on the American corporate business sector—despite banks' postwar emphasis on loans over investments in government securities. In the early postwar years these

intermediaries held only slightly more claims on the corporate sector than did commercial banks, but by the 1970s they held more than twice as much.

It is also important to distinguish the claims on business held by banks, which are overwhelmingly in the form of short- to medium-term loans, from the corresponding claims held by insurance companies and pension funds, which consist mostly of long-term debt and equity securities. These nondeposit intermediaries have traditionally held some three-fourths of all outstanding corporate bonds, and in recent years they have also come to hold nearly one-sixth of all corporate equity. The flow data in later tables give a further idea of these investors' importance in providing long-term debt and equity capital to American business corporations. In addition to accounting for much or all of the corporate sector's net long-term bond financing throughout the postwar period, since 1960 they have also accounted for more than all of its equity financing, absorbing also the equity holdings liquidated by the household sector. In sum, businesses' equity and bond financing has become increasingly dominated by these investors. Given their high rates of portfolio turnover, especially in comparison with individuals, equity and bond trading has become even more dominated by them.

[*Note:* The following concluding paragraphs place the above analysis of intermediation into the context of the essay as a whole.—Ed.]

This essay has documented three major developments that have dominated the American financial markets since World War II.

First, the nonfinancial economy has increasingly relied on private debt financing. At the war's end there was much government debt but little private debt outstanding. Since then both nonfinancial businesses and individuals have greatly increased their indebtedness, while the federal government has sharply reduced its indebtedness, in comparison to the economy's nonfinancial activity. The sustained rise in private indebtedness has represented in part a return to prewar practices after the aberration of the depression and war years and in part the establishment of new norms for indebtedness in relation to incomes. Perceptions of enhanced economic prosperity and stability, greater tax incentives to debt finance under conditions of accelerating price inflation and rising nominal interest rates, increased holdings of physical assets, and the relative decline in government-issued debt per se have probably played some part in accounting for the large relative increase in the nonfinancial economy's private debt.

Second, the economy has increasingly relied on financial intermediaries to hold the claims issued by nonfinancial borrowers. Individuals as well as other nonfinancial investors have allocated a growing share of their portfolios to claims on financial intermediaries, rather than direct claims on nonfinancial borrowers. Even in the holding of corporate equities, the one area traditionally dominated by individual ownership, intermediaries have begun to play a more substantial role. Nonbank deposit intermediaries, including especially savings

and loan associations, and private and public sector pension funds have figured prominently in the continuing overall postwar rise in financial intermediation. This increasing degree of financial intermediation has facilitated the increased debt financing of private nonfinancial borrowers and, together with a series of financial innovations, has also helped to break down barriers and frictions interfering with efficient allocation of the economy's financial resources.

Third, in contrast to its declining role as a direct borrower, the federal government has in other ways become more of an influence in the financial markets. The government has increasingly served as an insurer and guarantor of, and an intermediary for, private claims. Federal deposit insurance, instituted shortly before the war, importantly changed the character of private intermediation, and other forms of government credit guarantees have proliferated subsequently. Federally sponsored credit agencies, and more recently mortgage pools, have supplemented private intermediation. Government regulation of the financial markets has also increased in both scope and effect, and market participants have come to attach ever more importance to monetary policy actions as well.

Finally, it is important to re-emphasize that these three postwar developments—the rise of the private debt economy, the increasing degree of financial intermediation, and the growing role of the federal government—are not independent phenomena. These three ongoing processes constitute different but closely related facets of the same overall pattern of American financial evolution.

BENJAMIN M. FRIEDMAN

Structure Change in a Policy Model

(1989)

The object of this paper is to assess some of the major changes that have taken place in recent years in the ability of monetary policy to influence real economic activity, in part or as a whole: To what extent is housing now insulated from movements of short-term interest rates? How correct is the conventional wisdom that fundamental economic forces such as real interest rate effects on investment and wealth effects on consumption, rather than credit rationing and other forms of sand in the economy's gears (to use James Tobin's phrase), now constitute the heart of the monetary policy process? Apart from the relative growth of imports and exports per se, have exchange rates really become more important in how monetary policy works?

Clearly no one paper can provide satisfactory answers to questions like these, but the several forms of empirical evidence summarized here are suggestive in potentially interesting ways. The first section indicates the broad dimensions of the three major economic developments of recent years mentioned above—changes in the financing of residential construction, changes in U.S. international economic relations, and changes in patterns of business indebtedness. The second section shows that these (and presumably other) changes in the economy's structure have resulted in major changes in the kind of simple aggregate-level reduced-form relationships that, in the past, have often provided the basis for quantitative discussion of monetary policy. The third section reports the results of a more sharply focused examination of some of the potentially important changes that have taken place based on more carefully constructed equations describing the behavior of home building, business investment, consumer spend-

Excerpted, with permission, from Benjamin M. Friedman, "Changing Effects of Monetary Policy on Real Economic Activity," in *Monetary Policy Issues in the 1990s*, a symposium sponsored by the Federal Reserve Bank of Kansas City (1989), 57–58, 60–71, and excerpts from 75–98. References and footnotes to them have been omitted.

ing, and foreign trade. The final section briefly summarizes the paper's major conclusions.

Some Recent Developments in the U.S. Economy

Changes in the Financing of Residential Construction

A quarter century ago—specifically in 1964, to pick a typical nonrecession year—the average home buyer in the United States put 28 percent of the purchase price down and borrowed the remaining 72 percent.¹ Of the \$17 billion lent that year in the form of one-to-four family home mortgages (net of repayments), savings and loan associations accounted for \$8.1 billion, mutual savings banks for \$3 billion, and commercial banks for \$2.3 billion. Hence these three kinds of consumer deposit-oriented intermediaries accounted for nearly 80 percent of the final absorption of all home mortgage lending. Furthermore, in 1964, the share of these institutions' liabilities that consisted of ordinary deposits and deposit-type instruments was 93 percent at savings and loan associations, 98 percent at mutual savings banks, and 95 percent at commercial banks.² Federal legislation had precluded interest payments on demand deposits altogether since the 1930s, and had also imposed interest ceilings on commercial banks' time and saving deposits under the Federal Reserve System's Regulation Q. The Interest Rate Control Act of 1966 imposed analogous ceilings (administered by the Federal Home Loan Bank Board, in consultation with the Federal Reserve Board) on similar instruments issued by thrift institutions.

As a result, while the market for home mortgages depended heavily on financial intermediaries whose ability to lend depended in turn on their ability to attract deposits, by 1966 the Federal Reserve had available a ready device with which to affect these institutions' deposit flows—the relationship between short-term market interest rates and Regulation Q ceilings. For example, in 1969 the prevailing ceilings at thrift institutions were 5 percent a year on passbook saving accounts and 5.25 percent on saving certificates. When Treasury bill rates rose to an average 6.68 percent a year for 1969 (from 4.32 percent on average in 1967, and 5.34 percent on average in 1968), thrift institutions' total deposit inflow fell to less than half the 1967 level, and the pace of home building slowed as well. Similarly, in 1974 market interest rates averaged 7.89 percent a year for Treasury bills and 10.81 percent for commercial paper, compared to ceiling rates of 5.25 percent for passbook accounts and 6.5 percent for certificates. Thrift institutions' 1974 deposit inflows were less than half the 1972 level, and again home building slowed sharply.

In 1986—to pick a recent nonrecession year—the average home buyer in the United States put down 26 percent of the purchase price and financed the remaining 74 percent, a slightly greater loan-to-value ratio than in 1964. But of \$219 billion in net lending that year for one-to-four family home mortgages, commercial banks accounted for \$20 billion, credit unions for \$7 billion, mutual

savings banks for \$6 billion, and savings and loans for just \$500 million—in sum, just 15 percent of the total. Secondary mortgage pools sponsored by the Federal National Mortgage Association (FNMA), the Government National Mortgage Association (GNMA), the Federal Home Loan Mortgage Corporation (FHLMC), and the Farmers' Home Administration (FHA) absorbed (net of repayments) \$168 billion of home mortgages in 1986, or nearly 77 percent of the entire market volume. Thrift institutions and commercial banks continued to originate new mortgage loans, but in aggregate they sold almost as many loans to these pools as they retained in their own portfolios. While 1986 was a somewhat extreme year in this regard, mortgage pools accounted for fully 52 percent of all net lending for home mortgages during 1980–88, compared to 12 percent for banks and 21 percent for the three kinds of thrift institutions combined.

Just within this two-decade period, therefore, the development and rapid growth of the secondary mortgage market shifted the majority of net mortgage lending in the United States away from deposit-based intermediaries to specialized pools that package mortgages and sell bond-type obligations against them in the open market. FNMA had begun its lending operations in 1955, but as the comparison to a quarter century ago illustrates, the enormous growth of the secondary mortgage market is more recent.³ Congress separated GNMA from FNMA in 1968 and founded FHLMC in 1971, and private issuers of collateralized mortgage obligations (CMOs) did not begin activity until 1982. By the late 1980s this secondary market had effectively severed the traditional link between the volume of net mortgage lending done and the net addition of mortgages to the balance sheets of deposit-based intermediaries.

Moreover, by the late 1980s the Regulation Q ceilings that had earlier enabled the Federal Reserve to interrupt these intermediaries' deposit flows and hence to curtail the net volume of new assets they could book, had disappeared anyway, although the Federal Reserve began the elimination of these ceilings on its own in June 1970, by suspending the ceiling on interest paid on most large bank certificates of deposit. Congress mandated the widespread elimination of interest ceilings in the Depository Institutions Deregulation and Monetary Control Act of 1980. This legislation phased out the ceilings by successive steps beginning in 1981 and ending in 1985. The old Regulation Q is therefore gone, and (apart from the continuing legislative prohibition of explicit interest on corporate demand deposits) nothing has taken its place.

The development of the secondary mortgage market and the elimination of Regulation Q certainly do not render residential construction activity immune to the effects of monetary policy. But they do mean that the kind of directly visible impact that used to ensue when short-term market interest rates rose above the prevailing deposit ceilings, as in 1969 or 1974, will not recur. In the aftermath of these changes, the effect of monetary policy on home building no doubt depends, to a much greater extent than in the past, on fluctuations in both real and nominal mortgage interest rates.

Fluctuations in the relevant real interest rate presumably influence home buying and home building decisions in the familiar way that is standard in most theories of investment-type spending. Fluctuations in nominal mortgage rates per se can also have important effects, since for any given size of loan it is the nominal rate that determines the size of the monthly payment, which in turn affects the willingness of liquidity-constrained home buyers (i.e., almost all home buyers) to take on the commitment, as well as their ability to qualify in the eyes of potential lenders. In addition, with a large part of mortgage lending now done on an adjustable rate basis—between one-third and two-thirds of the total in a typical year—the influence of movements in both real and nominal interest rates may be either greater or smaller than when all mortgages bore fixed interest rates. In short, monetary policy presumably can still affect home building, but in different ways than in the past.

Changes in the Openness of the Economy

The Federal Reserve System has traditionally given a prominent place to international economic and financial considerations in its public accounts of the motivation underlying the conduct of U.S. monetary policy. Pressures on the dollar value of foreign currencies under the Bretton Woods system, fluctuations in currency values during the subsequent period of floating exchange rates, and the balance of international trade have all been standard items of concern in this context. Even so, there has always been suspicion that these expressions of concern were merely that—in other words, a belief that while the Federal Reserve paid ample lip service to international considerations, in fact it took little account of them in actual monetary policy decisions.

A quarter century ago—again, 1964 to be precise—exports of goods and services constituted 6.5 percent of total real output in the United States, while imports equaled 6.2 percent. By 1988, exports and imports had risen to 12.6 percent and 15.1 percent of total real output, respectively. With the foreign sector approximately twice as large as before relative to the size of the economy, the opportunity for monetary policy to affect aggregate economic activity by discouraging exports and encouraging imports, or vice versa, had clearly increased. (By comparison, residential construction and business fixed investment, the two spending components traditionally emphasized in this context, respectively accounted for 5.8 percent and 8.9 percent of total real output in 1964, and 4.8 percent and 12.2 percent in 1988.)

In addition to the fact that exports and imports have grown secularly relative to overall economic activity—and perhaps more important, from a monetary policy perspective—the gap between the two has become both larger and more volatile in recent years. From 1950 through 1970, the U.S. merchandise trade balance fluctuated in a fairly narrow range, with maximum \$6.8 billion (1 percent of total nominal income) in 1960 and minimum \$600 million (less than 0.1

percent of nominal income) in 1969. Trade deficits first began to appear in the early 1970s, especially after the OPEC cartel quadrupled crude petroleum prices in 1973, although even as late as 1976 the largest recorded deficit was still only \$9.5 billion, or 0.5 percent of nominal income. During 1977–82 the trade deficit stabilized at \$25 billion to \$35 billion a year, or roughly 1 percent of nominal income, despite another doubling of oil prices in 1979. But under the combination of extraordinarily expansionary fiscal policy and anti-inflationary monetary policy that prevailed thereafter, the trade deficit rose dramatically to \$169 billion, or 3.5 percent of nominal income, in 1987. Wholly apart from the implications for aggregate economic activity of a swing of this magnitude in the economy's foreign sector, the collapse of U.S. competitiveness that this implosion of the trade balance reflected rapidly became a national problem serious enough to figure importantly in macroeconomic policymaking.

Part of the reason why the U.S. trade balance became so unstable, of course—and, correspondingly, part of the reason for supposing that monetary policy either could or should do something about it—was the change from fixed to flexible exchange rates. In 1964 the Bretton Woods system was still firmly in place. The United States fixed the price of gold, at \$35 an ounce, but otherwise played no explicit role in setting currency values. Other countries mostly fixed the price of their own currencies in terms of the dollar, with relatively infrequent changes. This system weakened in 1968, with the increase in the official gold price to \$42.50 an ounce and effective restrictions on U.S. willingness to sell gold even at that price, but it remained in place until the United States unilaterally terminated it in 1971. Since then, exchange rates have fluctuated with more or less freedom, according to a shifting balance of market forces and official intervention that is sometimes coordinated and sometimes not.

The dollar has, in fact, fluctuated substantially since 1971. The dollar's maximum trade-weighted average value against ten major foreign currencies (in February 1985) was almost twice its minimum value during this period (in July 1980). At times, major changes have occurred quite rapidly. For example, after the February 1985 peak, the dollar fell 44 percent by December 1987. Moreover, theories of purchasing power parity notwithstanding, these have mostly been real changes, not merely the reflection of different countries' differing rates of price inflation. Given the familiar dependence of imports and exports on real exchange rates, together with the dollar's evident relationship to interest rates—or at least to the differential between interest rates on dollar assets and on assets denominated in other currencies—the combination of a larger foreign sector in the U.S. economy and flexible exchange rates has clearly opened new avenues for monetary policy to affect economic activity. At the same time, given the far greater volatility of exchange rates, participants in international trade may be less likely than in the past to view exchange rate changes as permanent, rather than as mere transitory blips, and therefore may be less likely to change their business relationships in response to whatever exchange rate fluctuations do occur.

The increasing openness of the U.S. economy has created complications as well as opportunities for monetary policy in areas other than just the sensitivity of trade flows to exchange rates. One direct result of the United States' chronic inability to meet foreign competition in goods markets both at home and abroad in the 1980s is a greatly enhanced role of foreign capital and foreign lenders in U.S. financial markets. The enormous U.S. trade deficit since 1982 has necessarily brought huge U.S. capital imports. As a result, the United States' net international investment position peaked at \$141 billion in 1981, and it has declined at an accelerating rate since then. By 1985 the United States had entirely dissipated the positive net international investment position built up since 1914, when the country first became a net creditor. By year-end 1988, the U.S. net international investment position was *minus* \$533 billion.

Because U.S. investors have continued to acquire modest amounts of foreign assets throughout this period, the growth in foreign ownership of financial assets issued and traded in U.S. markets is even greater than the erosion of the net international investment position suggests. For example, as of year-end 1980, private foreign investors held \$19 billion in U.S. government securities, or only 1.9 percent of the total amount outstanding. By year-end 1988, private foreign holdings had risen to \$121 billion, or 3.7 percent of the amount outstanding. Including central banks and other official institutions, foreign holdings of U.S. government securities rose from \$139 billion in 1980 to \$384 billion in 1988. Nor is the government securities market the only one to be so affected. Foreign holdings of corporate bonds issued in the United States, for example, rose from \$22 billion, or 4.4 percent of the total amount outstanding, in 1980 to \$180 billion, or 13.5 percent of the market, in 1988. And because foreign holdings in these markets are dominated by large institutional investors to an even greater extent than is the case among U.S. holdings, the percentages of trading volumes accounted for by foreign orders are typically even greater.

These large increases in foreign participation in U.S. financial markets complicate monetary policymaking in several ways. Merely changing the composition of asset holdings, away from one group of investors toward another, changes the market average portfolio behavior when the two groups of investors exhibit different asset preferences—as foreign investors and U.S. investors on average clearly do. More worrisome, in conjunction with flexible exchange rates, the increase in foreign participation raises the possibility that familiar cause-and-effect relationships may no longer obtain. For example, throughout the post-World War II period, a typical (though not invariable) market reaction to an increase in short-term interest rates has been an increase in long-term interest rates. But if higher U.S. short-term interest rates make dollar assets as a whole more attractive relative to assets denominated in other currencies, and if participants in the foreign exchange market also account for a large share of the trading in the dollar bond market, the effect of the stronger dollar may overwhelm the effect of

higher short-term rates, so that bond yields decline rather than rise. Analogous examples, involving markets for other assets, are plentiful.

These new complications for monetary policy are hardly the most worrisome aspect of the remarkable transformation of the United States from the world's leading creditor to its largest borrower. From a broader perspective, the increasing dependence on countries whose central banks prop up the dollar and support auctions of U.S. Treasury bonds; the wholesale acquisition of the nation's productive assets and real property by foreign investors; and the inevitable erosion of U.S. influence in world financial, commercial, and other affairs are the issues that genuinely matter. But monetary policy is important as well, and to the extent that these changes have made the conduct of a successful monetary policy more difficult, that, too, is a proper object of concern.

Changes in Business Indebtedness

A quarter century ago—that is, at year-end 1964—U.S. corporations in nonfinancial lines of business owed \$201 billion in debt borrowed from the credit markets, an amount equal to 30.4 percent of total U.S. nominal income at the time. By year-end 1988, nonfinancial business corporations owed \$1.9 trillion in credit market debt, equivalent to 37.5 percent of nominal income. Substantially all of this increase has taken place in the 1980s, as a consequence of the extraordinary wave of mergers, acquisitions, leveraged buyouts and stock repurchases that has seized corporate America during this period. During 1984–88 alone, the amount of their equity that U.S. nonfinancial business corporations paid down through such transactions exceeded the amount of new equity that they issued by \$444 billion.

Corporate businesses are hardly alone in having borrowed in record volume recently. Since 1980 all major sectors of the U.S. economy except farms have increased their outstanding indebtedness at a pace significantly faster than the economy's overall growth. The huge budget deficits that became the hallmark of U.S. fiscal policy under the Reagan administration led to the first sustained peacetime increase in the federal government's debt, compared to gross national product, since the founding of the republic. State and local governments have also increased their combined indebtedness relative to gross national product, although their borrowing has clearly slowed since 1985 (presumably because of new tax legislation). Households—mostly individuals, but also including personal trusts and nonprofit organizations—have likewise borrowed record amounts.

The resulting across-the-board rise of debt relative to income has marked a sharp departure from prior patterns of U.S. financial behavior. From the end of World War II until the 1980s, the outstanding debt of all U.S. obligors other than financial intermediaries fluctuated relative to total nominal income within a narrow range, with no evident trend either up or down. The overall debt-to-income

ratio was especially stable from the end of the Korean War until the 1980s, averaging \$136 of debt for every \$100 of total income during 1953–80. At year-end 1980, the total debt outstanding amounted to \$137 for every \$100 of total income. By year-end 1988, however, the corresponding level was \$181, greater than any prior U.S. debt level recorded in this century except for 1932–35 (when many recorded debts had defaulted *de facto* anyway).

Private-sector borrowers, including both individuals and businesses, have accounted for two-thirds of this increase. Not surprisingly, this phenomenon has generated widespread concern. In particular, discussion at a variety of levels has questioned whether a cascade of defaults by private-sector borrowers, initially touched off by some external shock—a collapse of oil prices, for example, or a sharp rise in interest rates needed to defend the dollar—might threaten the nation's financial system, or perhaps even the nonfinancial economy. Such concerns are clearly relevant for monetary policy.

While both households and businesses have borrowed in record volume during the 1980s, households have also built up record asset levels, including not just equities and other assets exhibiting high price volatility, but also liquid assets and other stable-price debt instruments. As a result, aggregate-level household net worth has shown no significant deterioration compared to national income since 1980 (and that remains true after the October 1987 stock market crash). By contrast, during the 1980s U.S. nonfinancial businesses have increasingly borrowed not to invest, in either tangible or financial assets, but simply to pay down their own or other businesses' equity. As a result, the aggregate net worth of both the corporate sector and the noncorporate business sector has declined substantially compared to national income.

As would be expected under such circumstances, interest coverage has deteriorated along with balance sheets. Since 1980 it has consistently taken more than 50 cents of every dollar of pretax earnings, and more than 30 cents of every dollar of pretax cash flow, just to pay corporations' interest bills—far more than in earlier periods. More troubling still, the corporate sector's problem in this regard has not gotten better as the economic expansion has advanced. Continuing large-scale borrowing has about offset the effect of continuing economic expansion in boosting earnings, as well as the effect of declining interest rates, so that corporations' interest coverage has remained poor throughout the decade to date. It is not surprising, therefore, that the current business expansion has been the only one since World War II (the only one ever?) to be accompanied by a rising, rather than falling, rate of business bankruptcies and debt defaults.

There is no lack of ready explanations for businesses' eagerness to take on debt. The U.S. tax code favors reliance on debt, by allowing borrowers to deduct interest payments but not dividends from taxable income while nonetheless treating interest and dividends alike in the taxation of income earned by recipients. This discrimination is all the greater in that borrowers can deduct the full (nominal) interest they pay, including not just that part corresponding to the "real"

interest rate but also the part that compensates the lender for the erosion of principal value due to inflation. Legal and regulatory restrictions on ownership of equities by many kinds of financial intermediaries create an additional incentive to fashion instruments (such as "junk" bonds) that have risk and return properties similar to equities but nonetheless constitute debt in the eyes of the relevant authorities. Larger underwriting spreads for equity than for debt offerings further increase the incentive to rely on debt when firms raise new capital. The greater speed at which firms can typically issue new debt than new equity is also a factor in contexts such as unsolicited takeovers, in which timing can be all-important.

What is puzzling, however, is why business reliance on debt has accelerated so much in the 1980s. Each of these features of the U.S. financial system favoring debt financing has been present for a long time, and some should be less potent now than they were in the past. The lowering of tax rates in the 1980s, for example, should have reduced the incentive to borrow. Given the continuing non-neutrality of the tax code, so should the slowing of inflation. At least for the present, therefore, the most honest answer to the question of why all this has happened *in the 1980s* is that nobody really knows.

But regardless of just what motives lie behind it, the massive increase in business indebtedness has raised concerns that it will make the U.S. economy excessively fragile in the face of downward shocks. The chief danger posed by an overextended debt structure in this context is that the failure of some borrowers to meet their obligations will lead to cash flow inadequacies for their creditors—who may, in turn, also be borrowers, and so on—and that both borrowers and creditors facing insufficient cash flows will then be forced to curtail their spending. Similarly, forced disposal of assets by debtors and others facing insufficient cash flows will lead to declines in asset prices that erode the ability of other asset owners to realize the expected value of their holdings if sale becomes necessary, and will therefore threaten the solvency (in a balance sheet sense) of still others. The most likely implications for the nonfinancial economy would be reductions in employment and in a variety of dimensions of business spending, no doubt prominently including investment in new plant and equipment. Indeed, it is likely that deteriorating interest coverage has also rendered the average company's capital spending more sensitive than in the past to tight financial markets generally.

At the same time, the ability of debtors to service their obligations is clearly not independent of what is happening in the economy. For most borrowers, both the size of cash flows and the value of the marketable assets they could liquidate in the event of an insufficiency depend to a great extent on general business conditions. Business downturns typically shrink the earnings of many firms, slow the growth of earnings for most others, and in many cases also reduce the market values of assets. Hence problems of debtors' distress are most likely to become widespread in the context of just the kind of economic difficulty that they tend to aggravate.

The most important implication for monetary policy is probably that, in the event of a business downturn, the U.S. economy would be likely to exhibit less resilience, and correspondingly more proclivity to contractionary dynamics, because of the greater potential for financial instability. Hence the real costs of a recession—costs in terms of forgone output, incomes, jobs, capital formation, and so on—are likely to be greater than would be the case without the higher level of business indebtedness. Given the ever-present risk that the economy may suffer an adverse shock from some entirely independent source, the higher level of business indebtedness therefore makes it all the more important for the Federal Reserve to arrest promptly any resulting contractionary tendencies.

But higher business indebtedness also matters for monetary policy in a more complicated, and more important, way because of the key role historically played by tight money in resisting price inflation. If the potential cost of recession is now greater because of higher business indebtedness, it is greater whether the recession's source is an external shock or an anti-inflationary monetary policy. To put the point in simple shorthand, the borrowing that U.S. corporations (and other businesses) have done in the 1980s has shifted the short- and intermediate-run trade-offs confronting monetary policy, both in the sense of changing the most likely set of outcomes following from any given course of Federal Reserve action, and in the sense of changing the attendant risks.

[The second section of the paper on aggregate relationships is omitted. The following excerpts from the third section are added to indicate the method and results of Friedman's econometric application of the above historical analysis. Technical material has been omitted.—Ed.]

Changes in the Sensitivity of Four Components of Spending

Even simple reduced-form relationships for aggregate income and output indicate that the sensitivity of real economic activity to monetary policy has changed in potentially important ways. But a more focused, and more detailed, approach is necessary to flesh out the nature of those changes in a sufficiently substantive way to provide information of potential use for the conduct of monetary policy. In light of the changes in the U.S. economy reviewed in the opening section, four distinct aspects of economic activity represent plausible places to look for such changes: home building, business capital spending, consumer spending, and foreign trade.⁴

Deriving from first principles a detailed representation of each of these four components of aggregate spending would be a task well beyond the scope of any one paper. The approach adopted here is instead to exploit the extensive research embodied in the Federal Reserve Board MPS model. For each component of spending, the general question to be addressed is whether the relevant empirical relationships have changed in recent years in ways that have

either heightened or dulled the sensitivity of real economic activity to aspects of financial conditions that are subject at least to influence, if not outright control, by monetary policy.

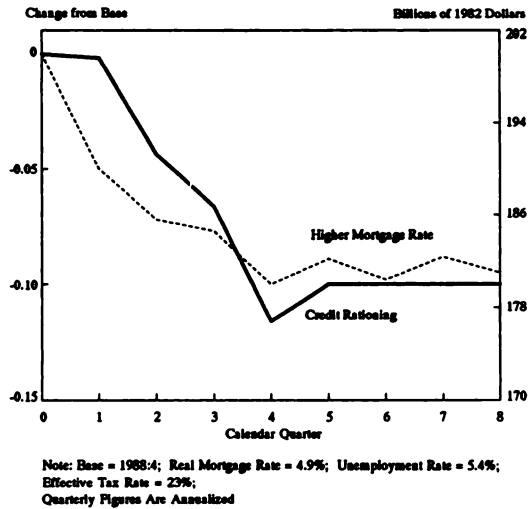
The answers yielded by this kind of single-equation approach are clearly only partial in nature. They necessarily omit the entire range of repercussions that act in a general equilibrium setting to reinforce the real effects of monetary policy, because one agent's spending decision determines another's product demand or income flow, and because many agents' asset demands collectively determine asset prices and goods prices, and hence alter their own and other agents' wealth. They also necessarily omit the whole range of repercussions that act to dampen the real effects of monetary policy, because many agents' spending and portfolio behaviors collectively determine interest rates and inflation rates, and hence the financing costs that they and other agents face. Even so, the limited exercise of establishing what changes have occurred in the first-round effects of monetary policy actions is informative, too. After all, if there were no first-round effects there would be no repercussions either.

Beyond the question of partial versus general equilibrium analysis, the findings from any empirical exercise along these lines are also necessarily limited by the use of the specific model that underlies it. Nonrobustness of quantitative estimates with respect to model specification has long been a familiar phenomenon in empirical economics, certainly including the investigation of relationships bearing on monetary policy. Nevertheless, any such analysis requires some well-specified model as a base, and in light of its long history of use in just this context, the FRB-MPS model is probably as appropriate a vehicle as any for this purpose. Especially for policy purposes, the right response to concerns about robustness with respect to model specification is presumably to carry out parallel empirical analyses based on alternative models, not to eschew empirical investigation in the first place. While such a comparative approach clearly lies beyond the scope of this paper, it is appropriate to view the findings reported here as one element—given the historical role played by the FRB-MPS model, a particularly interesting element—in such a broader endeavor.

Residential Investment

The most immediate question to ask about home building is to what extent the elimination of deposit interest ceilings and the development of the secondary mortgage market have made residential construction less sensitive to monetary policy by precluding restrictions on mortgage lending like those that occurred in tight-money episodes in the 1960s and 1970s, when market interest rates rose sharply above the then permissible deposit rates. Was the resulting credit rationing all there was to the effect of tight money on housing? Or is housing also sensitive to mortgage interest rates? If so, how far do mortgage rates have to rise

Figure 35.1 Residential Investment: Responses to 100 Basis Point Rise in Mortgage Rate and Imposition of Credit Rationing



to depress housing as much as an episode of credit rationing? And has the sensitivity of home building to changes in mortgage rates become greater or lesser in recent years?

The FRB-MPS model's treatment of residential construction activity combines a relatively straightforward model of investment, based on the real after-tax cost of capital, with a completely separate model for episodes of credit rationing. Figure 35.1 indicates the relative strength of these two channels of monetary policy influence by showing the results of using the estimated equation for residential construction investment in the FRB-MPS model to simulate the effects of two separate experiments. The solid line shows the effect on home building of a sustained increase of 1 percent in the mortgage interest rate, beginning in quarter 1. The dashed line shows the effect of a sustained episode of credit rationing involving a 6 percent decrease in the annual growth of real savings deposits.

The 1 percent increase in mortgage interest rates depresses housing fairly rapidly, with substantially all of the effect occurring within four quarters. The full effect is to depress the level of spending by approximately 9 percent (left scale), or roughly \$19 billion in constant 1982 dollars, based on the 1988:4 level (right scale).⁵ The imposition of credit rationing acts more slowly but has approximately the same effect after four quarters. Apart from differences in timing, therefore, these results imply that, given the relatively high level of real interest rates prevailing in 1988:4, it takes an increase of approximately 1 percent in mortgage interest rates to have an effect on home building comparable to that of a 1960s–1970s credit rationing episode.⁶

Business Fixed Investment

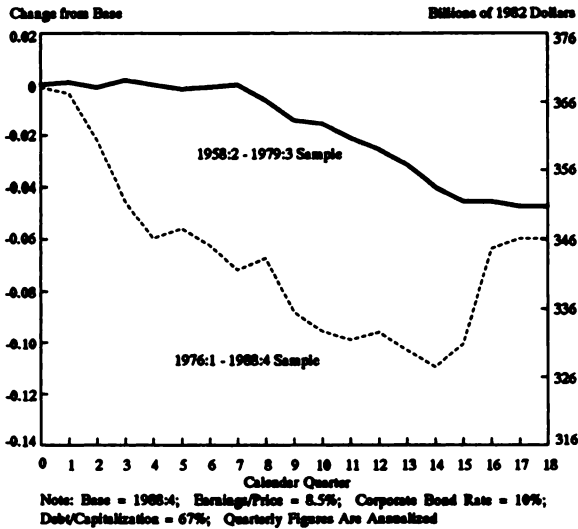
Business capital spending typically exhibits less cyclical volatility than does housing, at least on a percentage basis. But because capital spending bulks much larger in overall economic activity, the dollar decline in capital spending has exceeded the dollar decline in housing in four of the seven postaccord recessions.

In contrast to the results for housing investment, estimating the equation for expenditure on producers' durable equipment in the FRB-MPS model for different sample periods does indicate a substantial change over time in the behavior of business equipment investment. In particular, in recent years firms' investment behavior has apparently become more sensitive to variations in output and in the various determinants of the optimal equipment-output ratio. Figure 35.2 illustrates this change by plotting the results of two simulations that differ only in the sample used to estimate the equation.⁷ In both cases the experiment analyzed is an increase of 1 percent in both the corporate bond rate and the commercial paper rate beginning in quarter 1.

For the producers' equipment equation estimated using the 1958:1–1979:3 sample (the solid line), the decline in equipment spending that results from a 1 percent increase in both short- and long-term interest rates is modest in extent and gradual to take place. Little change occurs for the first six quarters, and the ultimate effect (which, by assumption, is complete after 18 quarters) is to depress equipment spending by 4.7 percent of its base level, or by \$17 billion in 1982 dollars based on the 1988:4 value.⁸ For the same equation estimated using the 1976:1–1988:4 sample (the dashed line), the corresponding effect is somewhat greater. The ultimate result is to depress equipment spending by 6 percent, or \$22 billion in 1982 dollars based on the 1988:4 value. Even more so than this difference in magnitude of the ultimate effect, however, the timing is very different. In the simulation based on the later sample, equipment spending falls approximately to the new (partial) equilibrium level within a year, after which the interim decline overshoots the equilibrium by roughly a factor of two, before ultimately recovering.

The finding that business investment in new equipment is now more sensitive to monetary policy actions, especially in the short run, than it was in prior decades no doubt reflects a complex interaction among several different effects that will require substantial further research to sort out. At the same time, the increasing sensitivity of business capital spending to financial conditions is certainly consistent with the implications of the more heavily leveraged position of the corporate sector in recent years, as reviewed in the first section, including in particular the historically large share of earnings required in the 1980s for interest payments. Given the deterioration of interest coverage, first in the 1970s and then even more so after 1980, it is hardly surprising that the typical firm now cuts back its investment spending more promptly when market interest rates rise.

Figure 35.2 Investment in Producers' Equipment: Response to 100 Basis Point Increase In Corporate Bond and Commercial Paper Rates

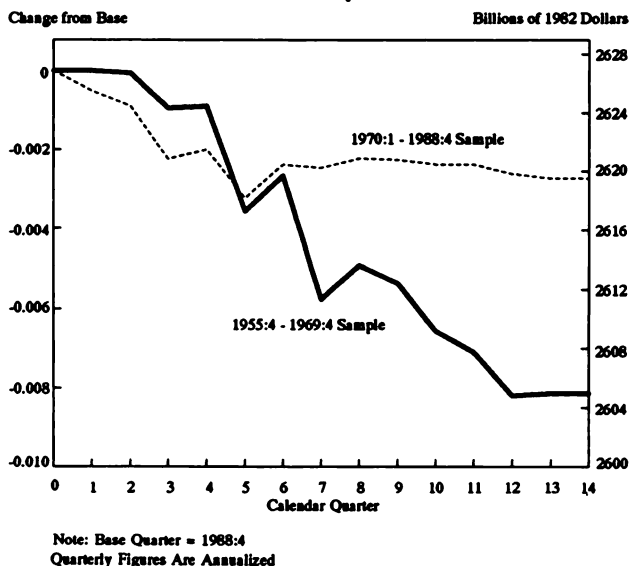


Consumer Spending

In the equation for consumption expenditures in the FRB-MPS model, the direct effects of monetary policy on consumer spending follow immediately from the effect of interest rates on property income (of which almost one-half has been interest income since 1970, and more than one-half in the 1980s) and on asset prices. Figure 35.3 shows the results of using the equation to simulate the effect on consumption of monetary policy, represented once again by a 1 percent rise in the commercial paper rate beginning in quarter 1.

As in the case of business capital spending, the effect of monetary policy apparently differs in recent years from what it was in the past. The two lines in Figure 35.3 show results for simulations that are identical except for the sample used to estimate [the consumption expenditure] equation.⁹ For coefficient values based on the 1955:4–1969:4 sample (the solid line), a 1 percent increase in short-term interest rates ultimately lowers consumer spending by 0.8 percent. While this percentage change may appear small, the effect is still highly meaningful in terms of the ability of monetary policy to affect economic activity because consumption bulks so large in aggregate spending. Based on the 1988:4 level, the resulting decline in consumer spending is equivalent to \$21 billion in 1982 dollars—a greater amount than in any of the simulations shown in Figures 35.1 and 35.2.

For coefficient values based on the 1970:1–1988:4 sample, the ultimate effect of tight money on consumption is much smaller. A 1 percent rise in short-term interest rates depresses spending by only 0.3 percent, or \$7 billion in 1982

Figure 35.3 Personal Consumption Expenditures: Response to 100 Basis Point Rise in Commercial Paper Rate

dollars. In contrast to the long time required for the effect to become complete in the simulation based on the earlier sample, however, here the effect is substantially complete within one year. Indeed, during the first year after the rise in interest rates, the effect on consumer spending is greater in the results based on the more recent sample. To the extent that episodes of tight money typically last not much more than a year, if that long, these results therefore suggest that the ability of monetary policy to affect real economic activity by slowing consumer spending is approximately unchanged.¹⁰

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Conclusions and Caveats

Major changes have taken place in the U.S. economy within the past quarter century. Three of these changes have implications that, at least potentially, are especially important for the ability of monetary policy to affect real economic activity. First, the elimination of Regulation Q interest ceilings and the development of the secondary mortgage market have deprived monetary policy of the ability to slow economic activity via a decline in home building, merely by increases in short-term interest rates not accompanied by increases in asset yields and declines in asset values more generally. Second, the greater openness of the U.S. economy, including both goods markets and financial markets, has broadened the potential base of effects on economic activity due to changes in dollar exchange rates but has also complicated other key linkages in the monetary

policy process. Third, the rapidly increasing indebtedness of private borrowers, including especially nonfinancial business corporations, has made the economy's financial structure more fragile and hence has increased the risks associated with business recessions.

Examination of relationships between monetary policy and economic activity at a disaggregated level indicate a variety of potentially relevant changes within the past quarter century, most of them at least broadly consistent with the changes that have taken place in the underlying economic environment. The elimination of major episodes of credit rationing in the mortgage market has clearly rendered housing less sensitive to restrictive monetary policy. Moreover, there is no solid evidence of change in the sensitivity of home building to mortgage interest rates. Business fixed investment has apparently become more sensitive to financial market conditions, at least in the short run, as is to be expected from the much higher leverage now carried by the typical nonfinancial firm. By contrast, consumer spending has apparently become less sensitive to interest rate increases and stock price declines, at least in situations that persist for lengthy periods of time. Although foreign trade has clearly grown relative to aggregate U.S. economic activity, both exports and imports exhibit less sensitivity to exchange rate changes (perhaps because exchange rates have become more volatile), and hence presumably less sensitivity to monetary policy actions, than in earlier years.

Taken together, the specific changes reported in this paper probably leave the Federal Reserve System neither more nor less able to influence real economic activity than it used to be. But they also mean that the influence of monetary policy works in different ways, which present different opportunities as well as different risks. Sound policymaking means taking account of those differences, not obscuring them behind aggregate-level relationships or mechanical rules that no longer fit the economy's actual experience.

Notes

1. Data on down-payment ratios are from the Federal Home Loan Bank Board.
2. Data on both lending and liabilities are from the Board of Governors of the Federal Reserve System, flow-of-funds accounts.
3. A large part of the motivation for the development of these new lenders, of course, was to shelter the housing industry from just the effects that Regulation Q brought at times of high market interest rates. Before the mortgage pools became such a major factor in this regard, the government relied on a different solution to this problem, using the Federal Home Loan Bank System to issue securities in the open market and channel the proceeds to savings and loan institutions via direct advances. Largely between FHLBS and FNMA, federal support accounted for 45 percent of total net extensions of one-to-four family home mortgages in 1969 and 52 percent in 1974.
4. A fifth possibility is business inventory accumulation, but the empirical literature has generated little consensus on the nature of financial influences on inventory investment.
5. For purposes of comparison here and below, aggregate gross national product in 1988:4 was \$4,033.4 billion in 1982 dollars.

6. Because one of the variables held fixed in the simulations is the rate of increase in the CPI rental index, the mortgage rate increase under study here is explicitly an increase in the *real* interest rate on mortgage loans. The base real interest rate matters in this simulation because the equation is in logarithmic form.

7. Choice of 1979:3 for the end of the first subsample corresponds to a familiar benchmark used in discussions of how monetary policy has changed based on the Federal Reserve's introduction of new monetary policy procedures in October 1979. Choice of 1976:1 (rather than 1979:4) as the beginning of the second subsample merely reflects the need for additional observations to facilitate suitable estimation of so many parameters.

8. The gradualness of the change is typical of results found using data from before the 1980s.

9. The choice of the two subsamples reflected an approximate halving of the sample period, together with a slight preference for conforming to popular discussions that often draw distinctions by decades.

10. The principal source of the difference is the change in the sensitivity of consumption to the three asset values, including especially equities.

INTERNATIONAL MONETARY FUND

**Capital Flows and the 1992 Currency
Crisis in Europe***(1993)***I. INTRODUCTION**

This report examines the implications of the growth and integration of international capital markets for the management of exchange rates, with particular attention to the inferences that can be drawn from the currency turmoil that shook the European Monetary System (EMS) last fall and winter.

In examining the main factors behind the September crisis, the International Monetary Fund's January 1993 *World Economic Outlook* concluded that the crisis "... reflected an unusual combination of divergent economic forces and important political events that raised doubts about countries' commitment to control inflation and to reduce excessive budget deficits and about the prospects for monetary cooperation in Europe" (p. 26). This paper focuses on the currency crisis from the perspective of international capital markets. It rounds out previous analysis in three respects. First, it provides a fuller picture of how the liberalization of capital flows, the growing imbalance between the resources of private market participants and those of central banks, the ascendancy of institutional investors with a global horizon, and the rapid progress in the technology of financial transactions have combined to increase the challenges associated with the management of exchange rates. Second, the paper discusses the activities of, and several of the tactical issues that faced, some key players during the crisis

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itself. And third, it identifies the types of policy options available to authorities for managing fixed exchange rates in today's world of global capital markets.

Section II outlines the changing landscape in international capital markets, with emphasis on the main features of the global foreign exchange market (including existing regulatory constraints). Section III introduces an important prologue to the currency crisis, namely, the substantial capital inflows into high-yielding currencies in the exchange rate mechanism (ERM). Section IV then discusses the roles of institutional investors and of banks during the turmoil, as well as assessing the behavior of liquidity in that period. The tactics of defending ERM parities—with a focus on official intervention and on defensive increases in interest rates—are taken up in Section V. Section VI introduces some of the policy options for managing exchange rates in the aftermath of the ERM crisis. A series of annexes examine the foreign exchange markets in greater depth; topics include their structure; foreign exchange hedging strategies; the regulatory constraints facing traders; the mechanics and economics of speculative attacks, together with the defense against these attacks; and case studies of some countries' experience during the ERM crisis. [Sections V and VI and the annexes are omitted.—Ed.]

II. THE FOREIGN EXCHANGE MARKET IN INTERNATIONAL INVESTMENT TODAY: PLAYERS, INSTRUMENTS, AND OPPORTUNITIES

Liberalization and reform of the financial sector have been a common theme in the industrial countries over the past decade; in some of them, liberalization gained momentum even earlier. The competitive forces unleashed by liberalization have swept away market segmentation and have greatly increased the menu of tradable financial instruments.¹ Liquid markets in central and local government securities, in corporate debt, in equity, in commercial paper, in bank certificates of deposit, in asset-backed securities, and in both exchange-traded and over-the-counter derivative instruments have become a prominent feature of the financial landscape in most Group of Ten countries. By 1992 the outstanding stock of publicly traded debt and equity securities in Europe and the United States had climbed to about \$24 trillion, while the notional amounts of financial derivative instruments outstanding had reached \$7 trillion. Retail and institutional investors—both domestic and foreign—now have a wide choice of liquid securities.

Liquid securities markets have grown hand in hand with the increasing concentration of savings in institutional funds (i.e., in mutual investment funds, pension funds, insurance portfolios, unit trusts, and SICAVs).² Total assets of U.S. institutional investors rose from \$2 trillion (66 percent of GNP) in 1981 to \$6.5 trillion (133 percent of GNP) in 1990. Similarly, the total assets of U.K. institutional investors climbed from £130 billion (52 percent of GNP) in 1980 to

£550 billion (108 percent of GNP) in 1990. U.S. and European fund managers alone now control more than \$8 trillion in assets (see Table 36.1). Thus investment decisions are becoming increasingly concentrated in the hands of professional fund managers. Simultaneously, as sophisticated information technology expands, "news" relevant to financial decision making is more and more reaching these managers at the same time, wherever their geographical bases. Consequently, during those periods when fund managers share homogeneous perceptions about both the evolution of financial variables and the impact of news, the potential exists for new information to produce massive purchases/sales and sharp movements in prices.

The progressive liberalization of cross-border financial flows—in tandem with the growth of liquid domestic securities markets and the increasing clout of institutional portfolio management—has induced growth in international portfolio investment that is historically unprecedented among the major industrial countries. Capital flows within most of the European Community (EC) were completely liberalized by July 1990. Total gross cross-border equity holdings in the United States, Europe, and Japan increased from \$800 billion in 1986 to \$1.3 trillion in 1991, while total cross-border ownership of tradable securities is estimated to have risen to \$2.5 trillion.³ Institutional investors have played an important role in this international portfolio investment, and at present, those in Europe invest a higher proportion (about 20 percent) of their assets abroad than do those in the United States or Japan (where the corresponding percentages seem to fall in the 5–7 percent range). Although these percentages seem modest, the total portfolios under management are large enough to translate into potentially large financial flows. For example, a 4.6 percent share of U.S. pension fund assets means \$125 billion, while a 6.6 percent share of U.S. mutual fund assets amounts to roughly \$90 billion (see Table 36.2). Equally significant, the international diversification of institutional investors is widely expected to increase markedly over time. In this regard, the share of foreign-currency-denominated assets in the portfolios of the world's three hundred largest pension funds is estimated to increase from about 7 percent at present to about 12 percent by the mid-1990s.

Another noteworthy development is that relationship buy-and-hold finance is giving way to transactions-driven finance, leading to the observation that it is no longer clear what a "long-term investment" means. Improved liquidity allows investors to move quickly in and out of domestic and international investment positions. Likewise, advances in the technology of financial transactions—ranging from back-office clearance and settlement, to trading and information systems, to settlement of payments—have reduced transaction costs to the point where they less and less serve as an impediment to rearranging portfolios when expectations change. For example, it is increasingly common to see large investors switch between bond and equity funds as soon as expected yields diverge. Also, many of the major equity and government securities markets have become

Table 36.1

Distribution of Assets Managed by Leading Fund Managers in Europe and the United States, December 31, 1991¹

	Number of Funds	Total Assets	Equity		Fixed-Income		Other	Not Specified		
			Total	Domestic	Foreign	Total			Domestic	Foreign
<i>(In millions of U.S. dollars)</i>										
Europe	100	3,701,438	998,173	640,285	357,888	1,341,067	993,052	348,015	984,773	
United Kingdom	41	1,191,151	682,729	434,503	248,226	328,456	168,630	159,826	30,000	
Switzerland	17	844,754	64,083	50,536	13,547	136,130	91,269	44,861	605,408	
Germany	11	408,406	80,201	52,296	27,905	199,613	116,426	83,187	42,944	
France	12	632,811	82,901	65,930	16,971	300,712	294,535	6,177	229,895	
Netherlands	9	329,486	40,623	15,733	24,890	174,880	151,558	23,322	63,880	
Denmark	2	30,771	3,901	2,608	1,293	25,112	24,772	340	—	
Sweden	3	160,443	18,233	10,965	7,268	121,807	113,076	8,731	—	
Belgium	2	23,361	4,820	3,247	1,573	15,011	11,628	3,383	—	
Italy	2	55,238	9,789	3,100	6,689	37,862	19,674	18,188	7,587	
Liechtenstein	1	25,017	10,893	1,367	9,526	1,484	1,484	—	12,646	
United States	100	4,486,648	1,520,428	1,366,701	153,727	1,788,600	1,717,995	70,605	11,729	
Combined total ²	200	8,188,086	2,518,601	2,006,986	511,615	3,129,667	2,711,047	418,620	996,502	
<i>(Total assets as percent of combined total assets)</i>										
Europe		45.2	27.0	17.3	9.7	36.2	26.8	9.4	26.6	
United Kingdom		14.5	57.3	36.5	20.8	27.6	14.1	13.4	12.6	
Switzerland		10.3	7.6	6.0	1.6	16.1	10.8	5.3	2.5	
Germany		5.0	19.6	12.8	6.8	48.9	28.5	20.4	71.7	
France		7.7	13.1	10.4	2.7	47.5	46.5	1.0	10.5	
Netherlands		4.0	12.3	4.8	7.5	53.1	46.0	7.1	36.3	
Denmark		0.4	12.7	8.5	4.2	81.6	80.5	1.1	19.4	
Sweden		2.0	11.4	6.8	4.5	75.9	70.5	5.4	—	
Belgium		0.3	20.6	13.9	6.7	64.3	49.8	14.5	—	
Italy		0.7	17.7	5.6	12.1	68.5	35.6	32.9	—	
Liechtenstein		0.3	43.5	5.5	38.1	5.9	5.9	—	50.5	
United States		54.8	33.9	30.5	3.4	39.9	38.3	1.6	0.2	
Combined total ²		100.0	30.8	24.5	6.3	38.2	33.1	5.1	12.2	
<i>(As percent of respective country total assets)</i>										
Europe										
United Kingdom									10.2	
Switzerland									12.6	
Germany									4.6	
France									21.0	
Netherlands									3.0	
Denmark									15.2	
Sweden									5.7	
Belgium									12.7	
Italy									15.1	
Liechtenstein									13.7	
United States									26.0	
Combined total ²									18.8	

Sources: Constructed from data published in *Institutional Investor* (various issues); and IMF staff estimates.¹"Leading" fund managers are the 100 largest managers in Europe and the United States as ranked by total assets. The smallest entities in the European and the U.S. lists had roughly comparable portfolio sizes.²Combined total of the European and the U.S. assets.

Table 36.2

Foreign Investments of Pension and Open-End Mutual Funds for Selected Industrial Countries, 1991

	Mutual Funds		Pension Funds	
	Total assets	Share of foreign assets in total assets	Total assets	Share of foreign assets in total assets
	<i>(In billions of U.S. dollars)</i>	<i>(In percentages)</i>	<i>(In billions of U.S. dollars)</i>	<i>(In percentages)</i>
France	396.5	4.3	...	...
Germany	174.6	34.9	...	...
Japan	349.4	...	655.0	7.0
United Kingdom	100.8	39.2	560.0	20.0
United States	1,346.7	6.6	2,725.0	4.6

Sources: InterSec Research Corporation and Investment Company Institute.

sufficiently liquid to permit automated program trading and hedging strategies. Trading volume in most major markets in the United States, Europe, and Japan has more than tripled in the past five years and is dominated by institutions, which is testimony to the propensity of fund managers to adjust their portfolios in light of changes in expectations. Where the transaction in the spot market is too expensive, the investor has the opportunity to take synthetic positions in the derivatives markets, where daily trading volume has nearly tripled since 1986. Various foreign exchange instruments are used to synthesize money market instruments as well as to implement hedging strategies.

The global forex market has grown even faster than international investing, with net turnover in the three largest markets (London, New York, and Tokyo) estimated to have undergone a threefold increase over the past six years. Market surveys conducted by the Federal Reserve Bank of New York, the Bank of Japan, and the Bank of England suggest that global net turnover now approaches \$1 trillion a day (up from \$640 billion in April 1989).⁴

The U.S. dollar remains by far the dominant currency in forex trading (accounting for 76 percent and 89 percent of 1992 net turnover in the London and New York markets, respectively). That being said, the share of cross-currency transactions (those that do not involve the dollar in one leg of the transaction) has gained ground over time, particularly cross-trading involving the deutsche mark—a development that traders ascribe primarily to the limited volatility of the deutsche mark vis-à-vis other ERM currencies (relative to that for dollar/ERM exchange rates).

The most significant development in foreign exchange markets in recent years has been the expansion of trading in derivative securities. Spot transactions accounted for only 50 percent of gross turnover in the United Kingdom in 1992 versus 73 percent in 1986. In contrast, trading in forwards and swaps increased from 27 percent of gross turnover in 1986 to 47 percent in 1992 (of which only 6 percent involved straight forwards). The expansion of the currency swaps market has been dramatic, with outstanding notional principal increasing more than fourfold, to \$800 billion, between the end of 1987 and the end of 1991. The most commonly swapped currency is the U.S. dollar.

Trading in the markets for currency futures and options contracts has also mushroomed. Daily turnover in these markets in London grew from negligible amounts in 1986 to \$8 billion in 1992, and from \$3 billion to \$23 billion in the United States. Most of this activity is in the over-the-counter (OTC) options market (where average daily turnover is reported by dealers to be about \$15 billion in the United States and \$5 billion in the United Kingdom). Futures market activity in these countries is lower, about \$6 billion and \$3 billion, respectively.

The main players in the forex market have long been large international banks, securities houses, nonfinancial corporations, and central banks. As suggested earlier, these traditional players have increasingly been joined by a pow-

erful new set of players, namely institutional investors (mutual funds, pension funds, insurance companies) and hedge funds. In their forex activities, hedge funds differ from institutional investors in two ways: They are unregulated, and their primary mode of operation is to take highly leveraged, speculative positions (typically using their assets as collateral or initial margin).⁵

Market activity is dominated by interdealer transactions. Indeed, it has been estimated that each customer order leads to four or five interdealer transactions, as dealers lay off their risk with other dealers, seek to earn profits by taking sometimes large intraday positions, and engage in frequent price-discovery trades. On first impression, turnover in the forex market may seem startlingly high. But that turnover needs to be compared with that in other liquid markets. To take a specific example, the average daily volume of U.S. government securities settled through the book entry system amounted to about \$400 billion in 1990—on an end-of-year stock of U.S. Treasury marketable debt of \$3.4 trillion (\$2.6 trillion in the hands of the public). This means that the entire volume of marketable debt turns over on average once every eight days! Since the forex market can be considered a mechanism for pricing tradable wealth internationally, and since the stock of publicly traded debt and equity is probably about \$24 trillion, an average daily turnover of \$1 trillion in the global forex market is not so remarkable after all; in fact, daily turnover can be expected to continue to increase over time.

The thirty to fifty largest banks (along with a handful of the largest securities houses) serve as market makers in the key currencies. Banks and securities houses also use the information they gather in market making to help guide their own—albeit usually limited—position-taking. On the whole, banks and securities houses are best seen as intermediaries in the forex market, supplying liquidity and advice to their customers (some of whom will be less constrained in their forex activities). Corporations routinely cover their commercial exposure, funding themselves in the most advantageous markets and using the currency swap market to eliminate the exchange risk. The forex activities of corporate treasury operations have more and more come to be viewed as profit centers. In addition to the normal intervention operations undertaken by virtually all central banks, a relatively small number of central banks manage their large international reserve positions quite actively. In institutional funds management the trend is to separate the exchange risk from the investment risk through hedging, and to treat the exchange risk as just another investment opportunity with its own risk/return profile. Hedge funds, using their capital as collateral, can generally leverage by a factor of up to ten to take speculative positions. The hedge funds with superior (long-term) track records of profitability have an influence that is more powerful than might be suggested from their net position-taking, because of their role as market leaders.

A summary of the existing regulatory constraints on foreign-currency-denominated investments for banks and institutional investors in the larger industrial

countries is presented in Table 36.3. In short, these constraints differ across types of financial institutions as well as across countries—to say nothing of differences between financial and nonfinancial corporations. For example, whereas some Group of Ten countries have a standard limit on net open forex positions by banks relative to capital, others prefer to set limits on an individual bank-to-bank basis (with higher limits for banks with superior risk-management systems) as part of overall bank examination. Hedge funds and nonfinancial corporations are not subject to any regulation at all with respect to their forex activities. Securities houses also typically are not required to hold dedicated capital against open forex positions. As seen in Table 36.3, mutual funds, insurance companies, and pensions are usually subject to some type of “prudence rule” on their foreign-currency-denominated investments, but such prudent behavior is not uniformly defined. Existing prudential constraints are generally not binding, and internal risk-management guidelines tend to be more restrictive. In other words, whereas the existing regulatory framework prevents some players in the forex market from making large-scale currency speculation their main line of business, it does not much constrain the private sector’s ability to shift its currency preferences quickly.

III. PROLOGUE TO THE ERM CRISIS: “CONVERGENCE PLAY”

To understand why the sales of certain ERM currencies in the summer and fall of 1992 were so huge, the story has to go back at least five years. Specifically, over 1987–91, large, cumulative inflows of capital into the higher-yielding ERM currencies occurred (see Table 36.4). One of the important factors motivating these inflows was the growing perception by international investors that the member countries of the EMS were on a continuous convergence path toward European Monetary Union (EMU), under which interest rate differentials in favor of the high-yielding ERM currencies would increasingly overestimate the actual risk of exchange rate depreciation. As one portfolio manager recalled the prevailing view, “Why settle for the yield on a deutsche mark bond when you can get the higher yield on a peseta or lira bond without a compensating exchange risk?” This came to be known in major financial centers as the “convergence play.”

As shown in Figure 36.1, the average spread during the last five years of the one-year lira yield over the corresponding deutsche mark instrument was nearly 5 percent (so, too, with the yield differential over U.S. dollar instruments); the attraction of peseta instruments (over 1989–92) is likewise apparent. When the United Kingdom entered the ERM in October 1990, it, too, became a candidate for convergence plays. Based on the same convergence scenario, the financial sector and the larger corporate issuers in the high-yield currency countries increasingly funded themselves in the lower-interest ERM currencies (mainly the

Table 36.3

Regulatory Constraints on Foreign-Currency-Denominated Investments by Major Financial Institutions in Selected Industrial Countries¹

Country/ Region	Banks	Pension Funds	Insurance Companies	Mutual Funds
France	The net foreign exchange position is limited to 15 percent of own funds for each currency and 40 percent overall.		Investments are subject to the matching assets rule; the location rule; and the allocation of assets rule.	Subject to disclosure and asset diversification rules. A fund may not hold more than 10 percent of any one category of securities of one issuer.
Germany	Net open foreign exchange positions (spot and forward combined) at the close of each business day must not exceed 30 percent of the liable capital.	No more than 5 percent of assets can be invested in overseas bonds.	Investment must adhere to the principle of localization; the principle of congruence, which matches the asset side with the liability side of an insurance company's balance sheet to avoid currency risks.	
Italy	Currently no formal restrictions on foreign exchange position. New prudential provisions for foreign exchange exposure are to be introduced.		Investment is subject to the matching requirement, i.e., commitments in a currency must be covered by assets denominated in the same currency.	May not invest more than 5 percent of their resources in securities issued by the same company if quoted or more than 10 percent if unquoted on a stock exchange, and may borrow up to 10 percent of their assets including borrowing in foreign currency.
Japan	Authorized foreign exchange banks are subject to individual ceilings on their overall (spot and forward combined) net positions in foreign currencies at the end of each working day.	Required to keep at least 30 percent of assets in guaranteed fixed-return domestic yen vehicles.	Holding of securities issued by nonresidents is limited to 30 percent of total assets; the same ratio applies to purchases of foreign-currency-denominated assets.	

Table 36.3 (continued)

United Kingdom	Net open dealing position in any one currency may not exceed 10 percent, and that of all currencies taken together may not exceed 15 percent, of the adjusted capital base. In practice limits for most individual banks are set lower than these general maxima after taking into account each bank's experience and internal control system.	Not subject to any specific limitations in their holdings of foreign currency assets.	Subject to matching and localization rules, which require them roughly to balance liabilities expressed in a particular currency with assets in that currency.	Collective investment schemes (unit trusts) are required to invest at least 90 percent of their assets in transferable securities in "approved markets," which includes markets in virtually all member countries of the Organization for Economic Cooperation and Development (OECD).
United States	Foreign currency exposure of banks is not subject to any regulatory limitations, but it is monitored through weekly and monthly reports on spot and forward positions.	Regulated by a special federal law—Employee Retirement Income Security Act (ERISA). Permissible investments subject to the "prudent expert" rule, which includes a requirement to give consideration to diversification and liquidity factors. Otherwise no explicit restrictions on holding foreign securities, including foreign equities and foreign-currency-denominated bonds.	U.S. state insurance regulations attempt "to prevent or correct undue concentration of investment by type and issue and unreasonable mismatching of maturities of assets and liabilities." These laws usually allow an unrestricted "basket" of investments for certain amount of assets, which can be allocated to foreign securities.	Primarily regulated by the SEC under federal laws. An open-ended fund may not hold more than 15 percent of its net assets in illiquid assets. Otherwise no explicit restrictions are imposed on investment in foreign securities.
European Community	Under the EC directive on capital adequacy if a firm's overall net foreign exchange position exceeds 2 percent of its total own funds, it will multiply the excess by 8 percent to calculate its own funds requirements against foreign exchange risk.²	The EC Pension Fund Directive requires member states to abolish arbitrary investment requirements such as lists of permissible assets or minimum investment requirements. Member states cannot require funds to hold more than 80 percent of their assets in matching currencies and must take account of the effect of any currency hedging instruments held by the institution.	The EC life and non-life insurance directives intend to remove all legal barriers for the creation of a common market in insurance. They also set out provisions to harmonize rules on admissible investment.	The Undertakings for Collective Investment in Transferable Securities (UCITS) Directive introduced the principle of the single authorization requirement and aimed at coordinating the laws of member states. No guidelines are set out for restricting UCITS fund's cross-border investment.

¹For the securities houses of these countries there are no explicit regulatory restrictions on foreign exchange positions and other cross-border investments.

²The same regulatory constraints apply to security houses.

Table 36.4

External Net Capital Flows for Selected Countries in the EMS (in billions of local currency)

	1986	1987	1988	1989	1990	1991	1992
United Kingdom							
Capital account ¹	-0.2	16.3	12.2	13.8	11.2	8.3	-0.7 ²
of which:							
Long-term private capital	-15.9	14.9	-4.6	-23.8	-1.5	-12.9	-
of which:							
Portfolio investment	-10.1	24.7	4.3	-20.9	-10.6	-14.8	-2.1
Short-term private capital	16.0	0.4	16.8	35.7	12.8	24.5	-8.2
of which:							
Banking sector	13.1	1.9	14.4	16.1	6.4	8.3	-18.5
Nonbanking sector	2.9	-1.5	2.4	19.6	6.4	16.2	10.3
Germany							
Capital account ¹	-82.6	-39.0	-127.5	-135.6	-90.1	14.4	26.0 ³
of which:							
Long-term private capital	40.4	-17.1	-80.6	-15.3	-59.1	-20.5	-23.7
of which:							
Loans	6.3	-12.4	2.7	4.0	-19.1	-27.2	6.9
Portfolio investment	52.8	8.3	-65.0	-5.0	-6.4	37.7	-21.5
Short-term private capital	-112.8	-17.2	-41.6	-108.3	-18.8	47.0	58.3
of which:							
Banking sector	-59.0	-6.1	-20.2	-56.7	0.6	39.8	58.4
Nonbanking sector	-53.8	-11.0	-21.4	-51.6	-19.4	7.1	-0.1
France							
Capital account ¹	-6.5	-26.0	19.3	43.4	138.2	-20.4	-244.1 ²
of which:							
Long-term private capital	-51.6	16.3	-1.3	76.3	92.3	21.6	36.4
of which:							
Loans	-48.6	-0.7	-20.3	-40.1	-6.5	-14.8	-28.5
Portfolio investment	12.5	32.4	45.4	162.8	188.1	86.1	76.8
Short-term private capital	47.4	-39.2	23.0	-29.9	48.9	-38.0	-277.3
of which:							
Banking sector	20.7	-55.9	14.0	37.0	149.4	4.3	-234.6
Nonbanking sector	26.8	16.7	9.1	-66.9	-100.5	-42.3	-42.8

Italy									
Capital account ¹									
of which:									
Long-term private capital	3,597.0	11,721.0	21,297.0	33,940.0	51,503.0	26,583.0	12,366.0 ³		
of which:									
Loans	-6,592.0	-2,586.0	7,413.0	20,205.0	21,668.0	-7,872.0	...		
Portfolio investment	-1,050.0	4,691.0	5,254.0	15,392.0	23,525.0	5,700.0	...		
	-1,555.0	-9,618.0	430.0	4,750.0	-337.0	-7,561.0	...		
Short-term private capital	7,456.0	8,519.0	11,015.0	12,432.0	24,144.0	36,197.0	...		
Spain⁴									
Capital account ¹									
of which:									
Long-term private capital	-373.0	1,418.0	1,311.0	1,950.0	2,281.0	3,229.0	1,155.0 ³		
of which:									
Loans	73.5	1,179.1	1,248.6	1,645.7	1,575.5	1,827.1	1,348.7		
Portfolio investment	-515.0	268.3	343.3	104.1	53.1	636.1	685.7		
	170.7	442.1	230.9	718.3	417.6	433.3	157.4		
Short-term private capital	-69.8	399.8	403.3	270.2	807.1	247.8	-336.2		

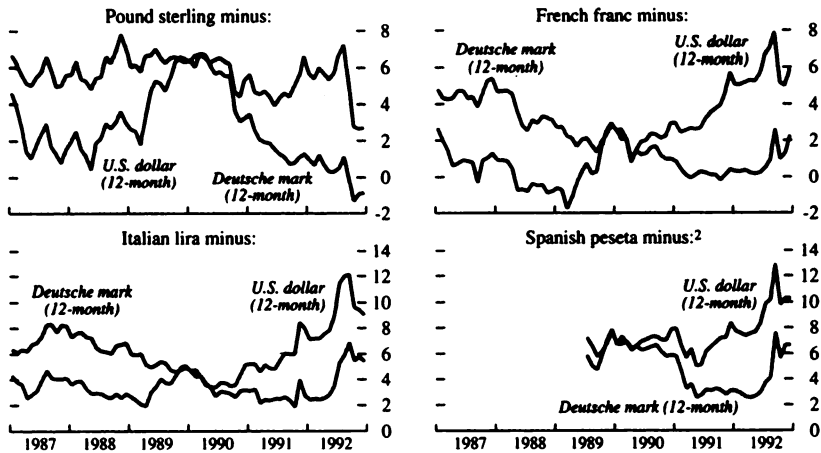
Sources: Bank of Spain, *Statistical Bulletin* (November 1992); Banque de France, *Bulletin Mensuel* (December 1992); Direction du Trésor and Banque de France, *La Balance des Paiements de la France* (various issues); *Monthly Report of the Deutsche Bundesbank* (various issues); and United Kingdom, Central Statistical Office, *Financial Statistics* (December 1992) and Press Release CSO (92) 187 (December 18, 1992).

¹Excluding changes in official foreign exchange reserves and errors and omissions.

²For the first three quarters of the year.

³For the first half of the year.

⁴Private capital includes capital movements in the banking sector.

Figure 36.1 Interest Rate Differentials on Eurocurrency Deposits¹ (in percent)

Source: Data Resources, Inc.

¹Labels indicate maturity of both components of the differential.

²Daily data for the Spanish peseta are not available before July 1989.

deutsche mark and to a lesser extent the Dutch guilder).⁶ In yet another reflection of the fixed exchange rate assumption, the exchange risk of positions against non-ERM currencies was frequently “proxy-hedged”—for example, a hedge of a deutsche mark position against the U.S. dollar was emplaced when lira securities were acquired. As the period since the last realignment in the ERM lengthened and as the political commitment toward EMU solidified—culminating with the signing of the Maastricht Treaty in December 1991—the strategy of riding the high nominal interest rate seemed secure. Without pretending too much precision,⁷ estimates suggest that the total of such convergence plays could have been as high as \$300 billion.⁸

The problem, of course, was that actual achievements in convergence among ERM countries—although significant—were neither durable nor deep enough to justify assuming complete fixity of exchange rates. Losses of competitiveness, large fiscal deficits not yet under control, weaknesses in financial sectors, sharp cyclical differences, and divergent mixes of monetary and fiscal policy across countries (in the wake of German reunification) were each vulnerable elements. Those vulnerabilities became more important once the negative outcome of the Danish referendum and uncertainties about the outcome of the French referendum challenged both the certainty of the EMU treaty ratification and the ability of some countries to deliver enough convergence (without EMU) to sustain existing exchange rate parities. In short, the markets “rediscovered” exchange risk. A massive shift out of certain currencies and the beginning of the recent crisis in the ERM followed.

IV. PRIVATE SECTOR BEHAVIOR DURING THE CRISIS

Role of Institutional Investors

Global Hedge Funds

As noted earlier, hedge funds—private, closed-end investment funds—assemble pools of private capital to engage in highly leveraged position-taking. Their moves last summer to position themselves favorably for possible exchange rate realignments in the ERM apparently served as a signal for other institutional funds managers to re-examine their own (convergence play) positions. Thus, although hedge funds have less than \$10 billion in capital, their potential influence on forex markets is larger.

The hedge funds appear to have taken two types of positions during the crisis. First, with respect to foreign exchange, they typically sold forward the vulnerable currency, usually using longer-dated contracts (one to two months) and employing their capital to finance and to maintain margin requirements. Second, they also established interest rate positions in that currency (e.g., by buying interest rate futures on the London and Paris futures exchanges) in anticipation of a rate decline after the devaluation. Intrinsic to this strategy was the expectation that authorities in the weak-currency country would raise interest rates to defend the parity—but also that this period of high interest rates would be short-lived. To close out their short currency positions, the hedge funds bought the devalued currency in the spot market before the forward contracts expired.

Institutional Investors and Corporations

While the hedge funds acted as market leaders, the real financial muscle was provided by institutional investors (mutual funds, pension funds, insurance companies) and by nonfinancial corporations. These market participants sought to undo as quickly as possible their increased holdings of assets denominated in currencies with high interest rates and/or to cover their deutsche mark funding. The mandates of most mutual funds are broad enough to allow a rebalancing of portfolios in anticipation of exchange rate movements. Anecdotal evidence suggests that funds sold their foreign assets, hedged their exposure, and sold the vulnerable currencies short (using their assets as collateral)—in roughly equal proportion (although outright selling of assets seems to have predominated in Italy, whereas hedging and short sales were probably relied on more in the United Kingdom).⁹ In some isolated cases, either the prospectus of the fund or the regulatory constraints on permissible financial operations limited the room for maneuver. For example, if a fund was established as a peseta bond fund, it could not cease to hold peseta-denominated securities even if it anticipated a peseta devaluation.¹⁰

In some countries (e.g., the United Kingdom), mutual funds can short a currency only up to the amount that they hold securities denominated in that currency. In other countries, mutual funds are limited in their ability to leverage their investments and, in effect, to short a currency. Corporate and financial sector borrowers from the high-yield ERM countries who borrowed extensively in low-cost ERM currencies undertook massive hedging operations during the summer and early autumn. U.S. corporations appear to have engaged in proxy hedging of their European currency exposures, using deutsche mark and French franc positions to hedge exposures in other European currencies. These corporations sought to unwind these hedges as the crisis unfolded.

Role of the Banking System

The international banking system itself does not appear to have taken unusually large net open positions in foreign exchange during the crisis. "Appear" is used because the information available does not permit determination of the intraday net open positions of banks—nor are the data on foreign exchange payments comprehensive enough to calculate how bank earnings during the crisis were apportioned between market making and other activities. Nevertheless, a robust conclusion is that the main role played by banks (and securities houses) during the crisis was to provide credit to those institutions seeking to liquidate long positions in vulnerable currencies, hedge such long positions, or establish open short positions in these currencies, and to make markets in foreign exchange.¹¹

Both of those activities proved profitable. In the early summer of 1992, immediately after the Danish vote, U.S. and European commercial banks and securities firms—many of which had, in their capacity as market makers in foreign exchange, witnessed firsthand the flow of funds into the convergence plays—began to negotiate credit lines in the currencies that were perceived to be vulnerable—lira, sterling, peseta, escudo, but not yet the French franc. By building up cash reserves and arranging credit lines (at fixed rates) in the vulnerable currencies before the crisis, they were subsequently able both to lend at a premium above their borrowing costs in the weak currencies and to buy forward the currencies under attack. Several banks have argued that such "liquidity plays" made more sense for banks than outright currency plays because they were less risky and allowed banks to employ their comparative advantage, namely, their access to large credit lines (relative to those available to other types of financial institutions). As the crisis was also characterized both by a large widening of spreads and by extremely high volumes, simple market making likewise paid handsome returns.

If banks play a key role during a currency attack by providing liquidity to other participants, where do the banks, in turn, obtain that liquidity? It is available only if central banks feel constrained in allowing interest rates to rise enough to choke off the increased demand for credit in the currency under attack.

And taking the argument one step further, interest rates may not rise much during the attack because central banks typically sterilize the contractionary monetary effects of their exchange market intervention.

Liquidity Problems During the Crisis

According to most observers, the forex market—as well as domestic money markets in ERM countries—generally worked well during the crisis. Given the huge volumes of securities and currencies traded during that period, as well as attempts to ration liquidity to those taking positions against existing parities, that outcome was hardly preordained. There were indeed strains. While forex spot markets operated continuously, spreads at times widened from five to ten times the norm in most of the ERM cross-rates. The size of trades also declined at times. For example, the normal size of a lira-deutsche mark trade is DM 50 million, but this size was not available in mid-September. Dealers in lire hesitated to quote forward rates because of the great volatility in short-term interest rates, and this market did not operate for two weeks after the devaluation. OTC option markets suffered, as interest rate volatility many times the norm made quotation of prices hazardous. As credit-line limits were reached, those institutions with lower credit ratings lost their access to interbank markets and had to move to derivatives exchanges to hedge their positions. The greatest liquidity problems actually surfaced in the European currency unit (ECU) market, where for a period in September and October it was not possible to complete wholesale transactions (as market makers would no longer bear the risk of holding an ECU trading portfolio). A significant spread (250 basis points) also developed between the official ECU and the private ECU (ECU-denominated bank deposits at ECU clearing banks) when some central banks tried to use their ECU reserves to support their currencies.¹² Trading in the private ECU against the basket came to a halt for about a week immediately after the onset of the crisis. Presumably the political events that raised uncertainty about the future of EMU also created increased uncertainty about the value of the private ECU in terms of the official basket.

Notes

1. The progressive liberalization and internationalization of financial markets has produced, *inter alia*, significant efficiency gains, including higher returns for savers, lower commissions for security transactions, and lower overhead costs on organized exchanges. To some extent the financial sector has been undergoing a restructuring similar to that in many other industries.

2. SICAVs are French money market mutual funds that are managed primarily by banks; they are similar to open-end investment funds in the United States.

3. In some instances, governments have sought to broaden their international investor base. For example, in late 1988 the French government successfully listed two issues of

government bonds, OATs (Obligations Assimilables du Trésor), in the form of American Depositary Receipts at the New York Stock Exchange.

4. This figure for worldwide turnover is an estimate based on turnover in the markets surveyed.

5. Hedge funds are typically incorporated in lightly regulated offshore jurisdictions; in addition, they are not constrained by standard investor-protection regulations—for example, U.S. Securities and Exchange Commission (SEC) registration—because the number of investors is kept small enough, and the minimum investment large enough, to be exempt from such provisions.

6. For example, the short-term external funding of Italian deposit money banks has doubled to \$160 billion since 1987.

7. As is well known, there are considerable problems in accurately measuring international capital flows.

8. In some way, the convergence play is another version of the “peso problem.” In the mid-1970s, the Mexican peso had exchanged for the U.S. dollar at the same rate for two decades. The Mexican interest rate was significantly higher than dollar interest rates, year after year. This phenomenon was dubbed the “peso problem.” The interpretation in 1975, which is now commonplace, was that the probability of a large devaluation was low because empirically the event had not occurred in a long run of data. The devaluation, once it occurred, would be large because of the large divergence in interest rates. The game for any market participant long in the peso was to time the conversion of funds back to dollars before the devaluation and obtain higher than the market return on dollars.

9. The harder or more expensive it was in a given market to obtain forward cover during the crisis, the more likely it was that institutional investors would resort to selling assets.

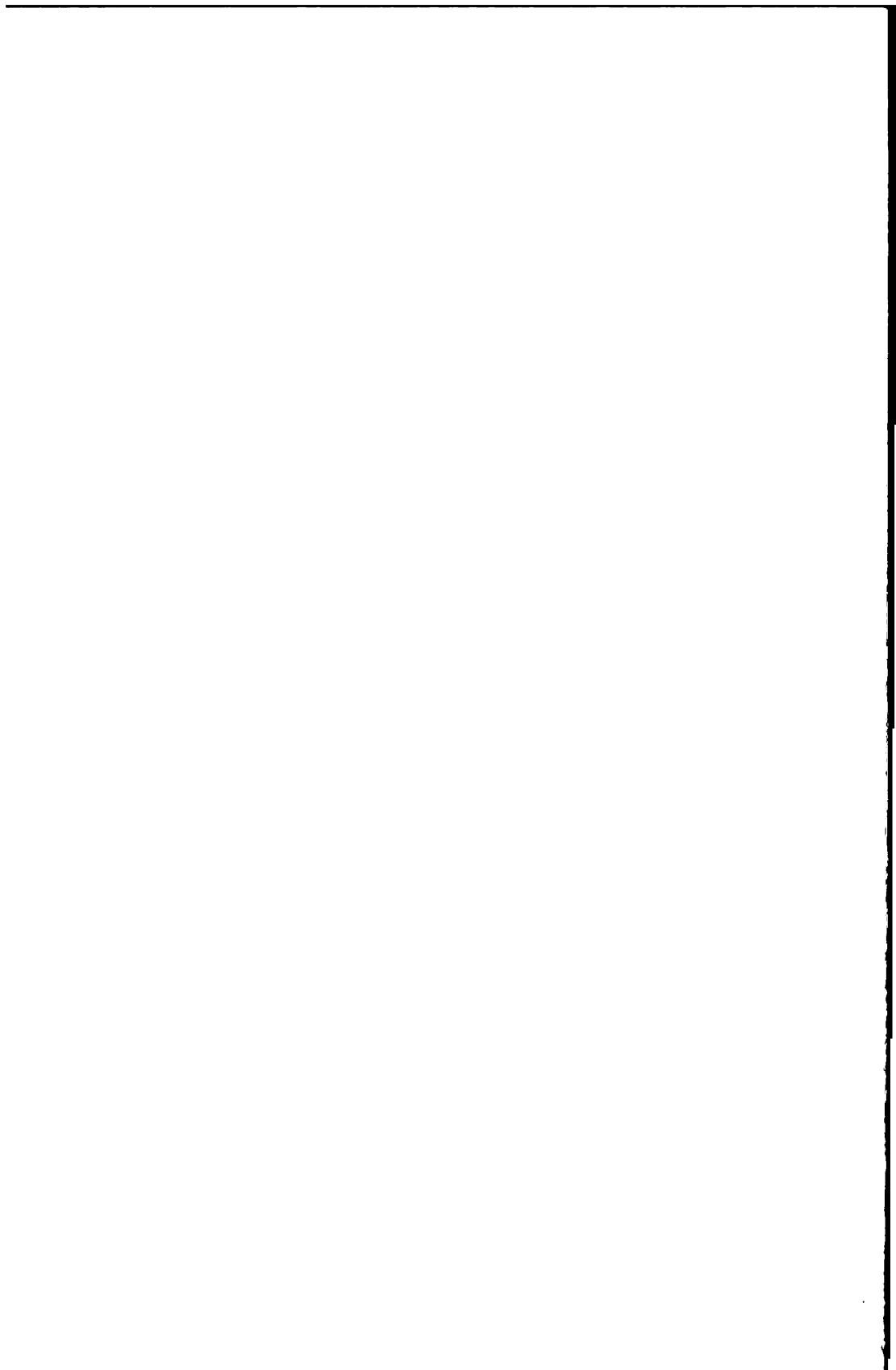
10. Similarly, if a fund had promised always to hold at least x percent of its total assets in foreign-currency-denominated instruments, it could only rebalance currency composition subject to that x percent floor.

11. These transactions share an important feature: They all require bank financing, either directly or indirectly. Bank credit is required for short selling, by either borrowing currency or selling it in a forward exchange contract. Hedging utilizes a forward exchange contract with a bank. And liquidating a long security position in a crisis typically requires bank funding of the market maker.

12. However, this discount was relatively short-lived, and the ECU had returned to its theoretical value in both currency and interest rate terms by early 1993. The ECU market began to recover slowly toward the end of 1992, and early in 1993 ECU bond issuance rose.

Part VIII

Uses of the Accounts in Current Policy Analysis



Introduction to Part VIII

Economics is—or ought to be—a policy science; that is, its ultimate objective should be wise policy advice. Knowledge of how the economy operates is important but it is instrumental only—to be used for the higher purpose. Even if we had complete knowledge of a particular economy, formulating wise economic policy would require other ingredients as well.

When one conceives of economics in this way, its practice takes on special methods that are in sharp contrast to the familiar stance of academic economics. The academic stance is abstract, logically rigorous, narrowly economic, and these days highly dependent on regression. On the other hand, policy analysis lies close to the facts, uses short chains of reasoning, is highly qualitative, encompasses values, and takes account of the noneconomic world. It considers the widest possible range of influences but need only know their rough size. Such is the style of good policy analysis.

Empirical models can make useful contributions to policy analysis when designed toward this end. But we need to be careful here: “Policy analysis” in a model (see, e.g., readings 25–29 and 35) is model analysis, not real-world policy analysis. The dilemmas of real-world policy making are not to be solved by simulations in a model fit to data of the past. The economy is changing, the new causal processes are unclear, the policy situation now is different. Historical analysis may well be as relevant as model analysis. And analysis of the current economic situation is essential.

The preface of this book refers to flow-of-funds as a partially hidden field of study. One key reason for this is that policy analyses and policy advice are often not made public. A policy document is made known to a few policy makers and then is filed *confidential*. It may or may not surface at a later date. In the U.S. federal government, for example, the staff briefings for the Federal Reserve Board have traditionally been kept secret. Such material is now available to economists—and this book—because of the Freedom of Information Act, but only after a lag of five years. The IMF’s admirable *Recent Economic Developments*, a current financial analysis produced annually for most countries, has a very restricted circulation outside the Fund. With regard to the private sector the situation is even worse; we know little of what analysis takes place. Thus in the present institutional context the ability of economists to understand and improve

policy analysis is made difficult. None of the policy analysis readings in Part VIII is from an academic source.

The role of the economist in policy making is generally as an adviser. The policy maker, not the economist, decides on the policy to be executed. Usually the economist's policy advice is not permitted to be directive. The economist may lay out a range of options, may make the case for (and against) a general option, or may simply lay out a background against which wise decisions can be made. The readings in Part VIII illustrate various uses of the flow-of-funds accounts in these sorts of policy analysis.

For example, at the Federal Reserve Board it is incumbent on the economic staff to stay current with the economic and financial situation, including the working up of the statistics necessary to do so. Then the knowledge of the various specialists has to be organized into briefing materials for the periodic policy meetings of the Board and especially for those of the Open-Market Committee. For many decades a document known as the "Greenbook" and titled *Current Economic and Financial Conditions* has been assembled monthly for this purpose. It is a substantial document of some hundred pages containing a Summary and Outlook section supported by detailed sections such as the Nonfinancial Scene, The Domestic Financial Situation, and International Developments. A projection of the national income and product accounts for several quarters into the future is usually included. Reading 37 is the Summary and Outlook section of the May 22, 1968 Greenbook, distributed for the May 29 Open Market Committee meeting. It will be noted that at this early date—prior to the advent of monetarism—the financial analysis is in terms of the demands for and supply of credit and is thus very flow-of-funds oriented.

Another briefing device used by the Board's staff is the "Chart Show," developed during the 1960s to present flow-of-funds policy projections to the Board. These are projections of the type Stephen Taylor discussed in reading 9. The introduction, the financial developments section and the conclusion of the chart show presented on June 16, 1975, are included here as reading 38. By this time the Board staff was under pressure to deal with the monetary aggregates, and the financial developments section initially does so, but the main discussion is of the flow-of-funds projection. That projection is clearly the basis for the rising interest rate conclusion. Tables 38.1 and 38.2—for funds raised and funds advanced in credit markets—indicate the structure of the projection. While the introduction lays out the principal assumptions of the projection to be discussed, the conclusion sketches an alternative "easier policy" proposal (and its envisioned results) as an alternative policy suitable to the cyclical situation.

During the 1960s and 1970s a number of private financial institutions developed a sophisticated analysis of financial markets using a flow-of-funds approach. Reading 39 from Salomon Brothers, *1980 Prospects for Financial Markets*, is a first-rate example. There Henry Kaufman and his colleagues present a forecast for the annual flows through the group of financial markets by which financial institutions provide

funds to the nonfinancial sectors. The analysis thus lays out an important background for the guidance of portfolio managers in the private sector.

The forecast is built by first estimating nonfinancial sector demands for funds in six major financial markets. The supplies of funds to these markets require an estimate of the total credit that can be made available by each group of financial institutions plus the allocation of its credit among the six markets. Then, of course, the supply and demand in each of the six must be brought to equality. The framework is presented in Table 39.1 of the reading. The forecast is a true forecast, not a projection based on particular assumptions, which means that government fiscal and monetary policies are part of the forecast. The outlook for interest rates is also presented; their movements seem clearly inferred from the market flow adjustments. The year 1980, incidentally, is of particular interest because of its combination of inflation, a very tight opening monetary policy, and the recognized start of a recession.

As historical data analysis moves toward the present it becomes current analysis. And current analysis—an understanding grounded in fact of what is currently going on in the financial system—is a crucial ingredient in the formation of proper financial policy. Reading 40 on flow-of-funds in Japan is an insightful example of current analysis that becomes a diagnosis of financial system operation.

The reading shows that the 1990–91 recession in Japan is associated with a contraction in fund flows that is in sharp contrast with the rapidly expanding flows of 1985–89. This earlier period was accompanied by an unwholesome inflation in the real estate and stock markets. The analysis makes clear that the financial system played a large part in this asset inflation, which in fact reflected a disruption of the normal intermediary process.¹ Much of the rapid growth in financial asset accumulation in these years represented capital gains.² And much of the fund flow decline during the recession represents the “unwinding” of the excesses of the earlier years.

The analysis for Indonesia (reading 41) illustrates what can be done with a very simple flow-of-funds system (see reading 13) that is available on a current quarterly basis. It is a saving-investment process analysis in an economy with an important rest-of-world sector. Among its features is the use of a flow-of-funds “chart matrix” to trace intersectoral financial impacts. This chart matrix helped identify several “roundabout” types of intermediation that enable the surpluses of the rest-of-world and government sectors to finance the deficit of the private domestic sector via the banking system. The analysis closes with an examination of monetary policy impact during these years.

A policy analysis of the above type is written essentially for staff economists. The policy maker may well not have the time for such a detailed and technical analysis. So the advising economist may well need a presentation for the policy maker that puts together briefly and simply the main policy implications of the analysis. Reading 42 is my own attempt at such a presentation—a policy brief. It was based on a staff analysis similar to reading 41 plus a judgmental flow-of-funds projection for the then current second quarter of 1994. To be effective,

such a brief needs to be current.

During the past two decades the full matrix-oriented type of flow-of-funds projection seems to have been less used at the Federal Reserve Board. For one thing its key proponents had moved on. In addition, during the earlier of these decades, policy attention shifted to the monetary aggregates both via the congressional strictures of the Humphrey/Hawkins Act and the policy emphasis within the Board itself. In the most recent decade the full wave of monetarism has receded, but it has not altogether disappeared.

So the current state of flow-of-funds analysis at the Board is not easy to judge. The flavor of the situation is perhaps represented by reading 43, excerpts from a recent monetary policy report to the Congress. There, among the obligatory discussions of the M1, M2, and M3 velocity changes and monitoring growth ranges, we find a substantial section on money and credit flows—the section included here. This analysis focuses on the financial adjustments in the aftermath of the debt explosion of the 1980s, on current debt levels and their percentage increases.³

Our final illustration of the use of flow-of-funds data for current policy analysis is an analysis by John A. Holsen prepared for the World Bank, a medium-term (four-year) macroeconomic outlook for Kazakhstan under unusually difficult circumstances. The analysis makes use of a flow-of-funds framework recently developed at the World Bank for country desk work.

Perhaps the heart of this projection is its translation of the many problems of current institutional change in Kazakhstan and their policy treatment into quantitative terms. For example, the restructuring of many enterprises is seen to require special financial support in the government budget at the same time that the system of producer subsidies is trimmed. The restructuring is seen to involve open unemployment moving from 1 percent to 12 percent and for which some social safety net will be required. Household real incomes need to be maintained while the whole scheme of transfers to them from enterprises is phased out. And so on. Policy trade-offs are involved at every hand. The social accounts in this outlook reflect only one set of social compromises. But in demonstrating a feasible and consistent financial path, they should be useful indeed as guides to policy.

Notes

1. In Monica Hargraves, Garry J. Schinasi, and Steven R. Weisbrod, "Asset Price Inflation in the 1980s: A Flow of Funds Perspective," International Monetary Fund Working Paper (1993), the case is made that shifts of financial structure during the 1980s caused funds to be channeled into the real estate and stock markets.

2. In "Flow of Funds in Japan, 1993," *Quarterly Bulletin*, Bank of Japan (August 1994), data are presented that break down the change in corporate and personal net financial positions into the annual financial deficit and annual capital gains on financial assets. These detailed data support the earlier conclusion.

3. As an analytical device, percent increases relate the variable to its own preceding values but make size comparisons with other, related variables difficult. Social accounting checks also get ruled out.

STAFF OF THE BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM

**Monetary and Credit Policy Briefing:
The "Greenbook"**

(1968)

Summary and Outlook

Outlook for Economic Activity

The excessive pace of economic expansion appears to be continuing in the second quarter of 1968. The increase in the gross national product is likely to total close to \$24 billion, exceeding that of last quarter by an appreciable margin. The rate of growth in real output is now estimated at 7 percent annually, above the 6 percent attained last quarter. This heightened rate of output indicates additional pressure on already tight manpower, and further rapid increases in wage rates and prices.

A number of factors appear to be combining to generate this substantial growth in overall output: defense expenditures are likely to continue upward at the accelerated rate of the first quarter, investment in inventories is likely to be rising, and net exports are expected to recover substantially from their weak first-quarter performance. Residential construction expenditures are also increasing faster than expected, reflecting housing starts at an estimated annual rate of about 1.5 million for the quarter.

On the other hand, expansion in personal consumption expenditures will probably be smaller than the exceptional advance in the first quarter. The increase will still be substantial, however, in comparison to those in the preceding year and a half. A dip in retail sales in early April appeared to be attributable

Excerpted from Staff of the Board of Governors of the Federal Reserve System, *Current Economic and Financial Conditions* (May 22, 1968), pp. I-1 to I-8

mainly to civil disturbances, and was followed by renewed strength in auto buying and increased demand for other consumer goods in late April and early May. Disposable income is rising more rapidly than in the first quarter, reflecting expanding employment, rising wages, large Federal tax refunds, and full reflection of the increase in social security benefits. The rise in income should outpace the projected increase in consumer spending, resulting in an increase in the saving rate to about 7 percent from the 6.6 percent in the January–March period.

Outlook for Prices and Resource Use

The rise in the industrial price average—which has slowed this spring—is likely to step up again this summer. The recent slowing has been associated in large part with the poststrike downward adjustment in copper prices. The total number of industrial commodities with reported price increases—including materials and both consumer and producer products—remains large, indicating sustained and widespread upward cost and demand pressures.

Prices of foods and foodstuffs at wholesale have been marking time since February, following a sharp run-up last winter. Resumption of a moderate rate of advance is expected, in large part because of continuing strong demands pressing on moderately lower supplies of livestock and products. Rising food prices, further upward cost pressures in the trade and service sectors, and the lagged effects of earlier wholesale price increases are likely to keep the CPI moving up at a fast pace in the near future.

Upward pressure on wages and unit labor costs will continue throughout this quarter. High first-year wage increases (in the telephone industry, the settlement was about 9 percent) are likely to spread to the aluminum, shipbuilding, and apparel industries, and substantial wage and fringe packages (7 to 10 percent annually) have already been negotiated or are imminent for a major portion of the construction industry.

Employment growth, barring prolonged strikes in aluminum and shipbuilding and any significant expansion of current strike activity in the construction industry, should be large enough to keep the labor market tight and the unemployment rate at the April level of 3.5 percent. The projected rise in industrial output, in pace with real GNP growth, should increase slightly the rate of manufacturing capacity use.

Demands for Credit

The recent sharp rise of interest rates, and the accompanying state of near disarray in some long-term markets, reflect the continuation of dilatory behavior on fiscal legislation, as well as the cumulative effects from the tightening of monetary policy since last fall. Unless expectations of an even firmer monetary policy, or fears of a drying up in bank funds, are moderated, still higher interest rates remain a distinct possibility.

The calendar of new corporate bond issues appears to be holding near its advanced May size, while municipal bond offerings seem to be building up somewhat further. But some postponements have already occurred, and it is possible that additional issues—either now on the calendar or in the planning stage—may also be postponed as a result of the very high level of interest rates and congestion in marketing that recently developed in capital markets. On the other hand, tendencies for borrowers, especially corporations, to shift borrowing to banks and away from capital markets may be discouraged by the further tightening of lending standards that is reported to be in process at banks.

The present lull in business loan growth at banks is likely to be followed by a surge in June, in connection with tax payments, even though banks' attitudes toward lending are becoming more restrictive. While corporations did improve their liquidity positions earlier this year, uncertainties as to future availabilities of credit may influence businesses to rely fairly heavily on currently available bank funds rather than on sales of liquid assets in meeting June tax payments. Demands for bank loans in the weeks ahead may also be influenced by more rapid inventory accumulation.

The Federal Government will not need to raise much new cash over the next few weeks, but its cash needs will become sizable very early in the new fiscal year. Assuming only payment for the \$500 million Export-Import Bank PC after mid-June, the Treasury's cash balance is likely to necessitate very large cash borrowing to cover the July–August deficit, perhaps as high as \$9 billion (and about \$1.5 billion less if—*mirabile dictu*—a tax bill is passed before midyear). The market is likely to begin to anticipate such large needs as June progresses—for instance, dealers are likely to want to continue reducing their positions—with consequent further upward pressures on interest rates. The Treasury may also find it desirable to anticipate its July–August needs by raising, or announcing, some new cash in one form or another before the current fiscal year ends.

Supply of Funds

Given the current level of market interest rates and existing Regulation Q ceilings, there appears to be little likelihood that time and savings deposits over the next couple of months or so will show any more strength than during the past two months, when they have grown at only about a 2 percent annual rate. In fact, time and savings deposits could well be even weaker, since banks will probably not be able to avoid a fairly sizable attrition in outstanding CDs in June. And banks will find it quite difficult, and probably impossible, to regain lost CD funds in early summer, when securities, including Treasury bills, issued to meet Treasury cash financing requirements begin to compete more actively with CDs and tend to drive short-term market rates further upward.

Consumer-type time deposits—both savings and other time—probably will rise slowly over the next few weeks. In July, however, another substantial out-

flow of funds from consumer time and savings deposits at large commercial banks seems likely. This outflow probably will be considerably larger than that in April, not only because the general level of market rates will be considerably higher but also because interest crediting at midyear is more widespread than at the end of March.

Demand deposits are not expected to provide a substantial offset to the reduced time deposit inflows. With deposit sources of funds constrained, further growth in Eurodollar borrowing appears likely, although any substantial further demands in that market may push interest rates on Eurodollars up rather sharply.

The current level of market yields and the projected volume of Treasury financing likewise suggest continued reduced inflows at the nonbank depository institutions. Looking further ahead, to the late June-early July reinvestment period—when all institutions credit interest—outflows of funds from those institutions can be expected to be very large unless there is a tax increase.

Given this reduced access to funds by institutions, and with outstanding mortgage commitments already high, new mortgage commitments are expected to continue to slow further while mortgage yields continue to rise. Recent advances in mortgage yields have matched the most recent increase in bond yields, and the diversified lenders continue to have no incentive to shift funds to the mortgage market—despite recent regulatory revisions in FHA and VA ceilings.

Other markets, too, will probably continue to feel the effects of the tightening of supply conditions, at least for a while further. The extent to which there will be additional adjustments in mortgage and other debt markets will depend in part on the experience of institutions and the market generally during the June tax and midyear interest-crediting periods.

International Developments

Release of the preliminary balance of payments results for the first quarter of 1968 had little effect on exchange markets, since the main magnitudes—notably the poor showing on merchandise trade and the liquidity deficit at an annual rate of \$2.5 billion—had been known earlier. Preliminary indicators for April indicate a somewhat higher rate of deficit in that month, with some renewed outflow of U.S. bank credit. No early improvement in the overall liquidity balance is in sight. In April and May substantial inflows of foreign liquid funds through branches of U.S. banks have continued.

Gold and foreign exchange markets have become increasingly tense in recent weeks, with sterling very weak, gold at new highs, and the German mark, Dutch guilder, and Swiss franc approaching their ceilings against the dollar. The root sources of tension include realization that the U.S. payments deficit is likely to be substantial again this year, disappointment that the U.K. foreign trade figures have not yet shown much improvement, continuing substantial payments surpluses for Germany and some other European countries, and increased discus-

sion of possible exchange rate changes. Uncertainties have been intensified recently by further postponement of fiscal action in the United States and by political difficulties in Britain and in France.

Events that could calm the markets might include sales of South African gold in the free market, action by the U.S. Congress to raise taxes, and some sign of improvement in the U.S. and U.K. trade figures. But these events may not happen soon. In particular, while the U.K. trade balance may well improve in the months ahead as the effects of the November devaluation and the March budget make themselves increasingly felt, near-term pressures on sterling resulting from shifts of both private and official funds seem likely to remain severe.

STAFF OF THE BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM

Policy Projection with
Chart Show Briefing

(1975)

Introduction: Mr. Partee

Today's presentation updates the staff's projection of the probable course of the economy through the rest of 1975 and extends it to encompass all of 1976. As usual, we approach this assignment with some trepidation. A great deal can go differently than one expects even in a brief look ahead, and the exposure is much greater when the horizon is 18 months. Moreover, there are discrete events that could occur but simply cannot be predicted. For example, we have not made allowance on our projection for the possibility of major strikes, or for another oil embargo, or for a natural gas shortage next winter that could lead to widespread industrial shutdowns, to name a few.

Nevertheless, barring major unpredictable events, the broad configuration that the economy is most likely to trace now seems reasonably clear. We have suffered a major setback in economic performance over the past 1½ years, marked by the debilitating effects of generalized excessive inflation, the distortions of the oil embargo and subsequent run-up in energy costs, and finally by a sharp and pervasive economic recession. But now the recession phase of the cycle is at or very near its end; the rate of price inflation has moderated considerably; and there is every prospect of economic recovery extending over the next 1½ years or more. The question is how satisfactory that recovery is likely to be.

This is the question that will be addressed by today's presentation. In developing our base projection, which was laid out in detail in the Greenbook, we

Excerpted from Staff of the Board of Governors of the Federal Reserve System, *Staff Presentation to the Federal Open Market Committee* (June 16, 1975), 1-5, 17-22, 28-32.

Figure 38.1 Principal Assumptions

Monetary Policy

- Growth of M_1 averaging 6 1/4% annual rate through 1976
- Treasury bill rate approaching 9% by late 1976

Fiscal Policy

- Unified budget expenditures of \$367 billion in FY 1976
- Extension through 1976 of the 1975 income tax reduction

Energy Prices

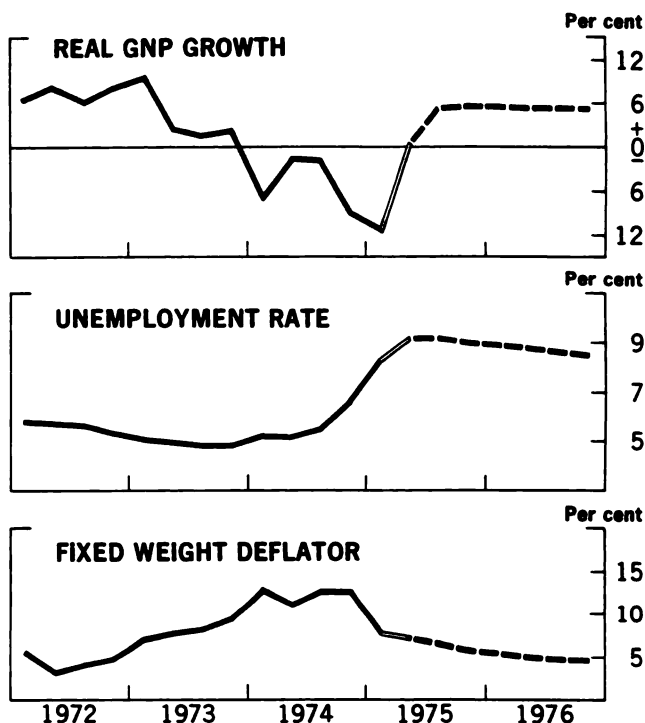
- Increase of \$1 in import tax on crude oil in June 1975
- Increase of \$1 in price of imported crude in October 1975
- Increase of 10% in price of natural gas

have adopted several policy assumptions. The monetary policy assumption calls for a continuation of the present policy stance through 1976, as indexed by growth in the narrow money supply at around the 6.25 percent midpoint of the range that has been announced by the Committee. We believe that this policy would result in generally rising interest rates over the forecast period, since the projected increase in nominal GNP is persistently well in excess of the money growth rate.

For fiscal policy, we have assumed expenditures for fiscal 1976 that are closely in accord with the congressional budget resolution and \$8 billion higher than projected in the Administration's midyear budget review. The difference from the Administration's estimates reflects mainly our assumption that Congress will not accept the remaining proposals for deferrals and rescissions in existing expenditure programs. We have also assumed that the temporary tax reductions applicable to 1975 incomes will be extended for 1976, which has the effect of reducing 1976 revenues by about \$5 billion. In our calculations, the fiscal 1976 deficit would amount to \$68 billion on an actual basis, and to about \$5 billion when revenues and expenditures are converted to those that would be produced by a high-employment economy.

Some assumptions are also necessary with regard to energy. For our projection, we have adopted the quite conservative view that the recent \$1 increase in the oil import tax will be retained, that the OPEC cartel will raise prices by only \$1 per barrel in the fall, that there will be only a small step toward decontrol of natural gas prices, and that the price of "old" domestic oil will remain frozen.

Figure 38.2

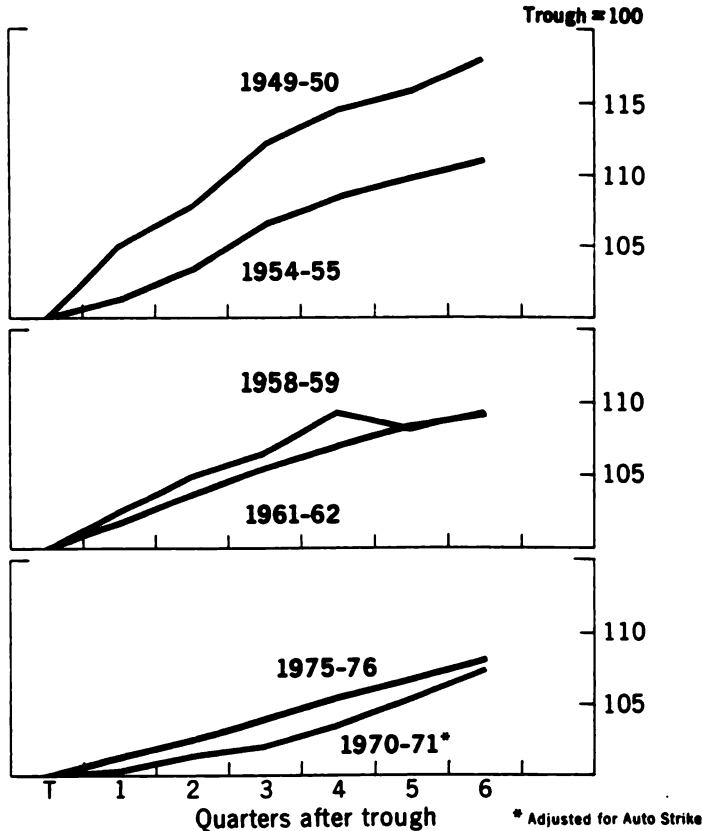


Even so, the result is a first-year increase in the domestic energy bill of \$11 billion, most of which would represent a diversion from effective consumer buying power to receipts by foreigners, domestic energy producers, and the government.

Given these policy assumptions, our projections for the economy are not notably more buoyant than they have been in other recent Committee briefings. We now believe that there will be no further decline in the real GNP this quarter and that substantial recovery will get under way in the quarter immediately ahead. But we see no basis for expecting that the recovery will become truly vigorous or, for that matter, that it will lose momentum during the projection period. The result is that the rate of real expansion is projected to remain quite constant quarter by quarter—in a range of 5 to 6 percent, annual rate—and that only a gradual downdrift in the unemployment rate can be anticipated. Further significant progress is likely on the inflation front, we believe, though the improvement is constrained somewhat by our assumption of rising energy costs.

The recovery that we are projecting is on the moderate side, but it is not the weakest one of the postwar period. Over the first six quarters, the increase in real GNP amounts to a little more than 8 percent, which is about 1 percentage point

Figure 38.3 Real GNP Growth in Postwar Recoveries



more than in the 1970-71 upturn. Postwar recoveries generally have added successively less to the level of real GNP. The 1949-50 recovery was the strongest of the lot, and it was well along before the onset of the Korean War. The first six quarters of recovery in 1954-55 added about 11 percent of the real GNP, and those in 1958-59 and 1961-62 raised real output by about 9 percent, although the 1958-59 upswing was quite a bit stronger initially than the 1961-62 upturn. What we are projecting is close to an average of the last three cyclical experiences.

For this amount of recovery to occur, we are counting on a considerable improvement of demand in a variety of sectors. An increase in real consumption, a gradual reversal from inventory liquidation to renewed accumulation, some pickup in residential construction, and—next year—the beginnings of recovery in real fixed investment are all contained within our overall projection. It is not an absence of generalized improvement that accounts for the moderate character of the economic recovery, but rather the fact that none of the sectors appears likely to develop notable strength. We could be wrong in this, and yet it is hard to see

Figure 38.4

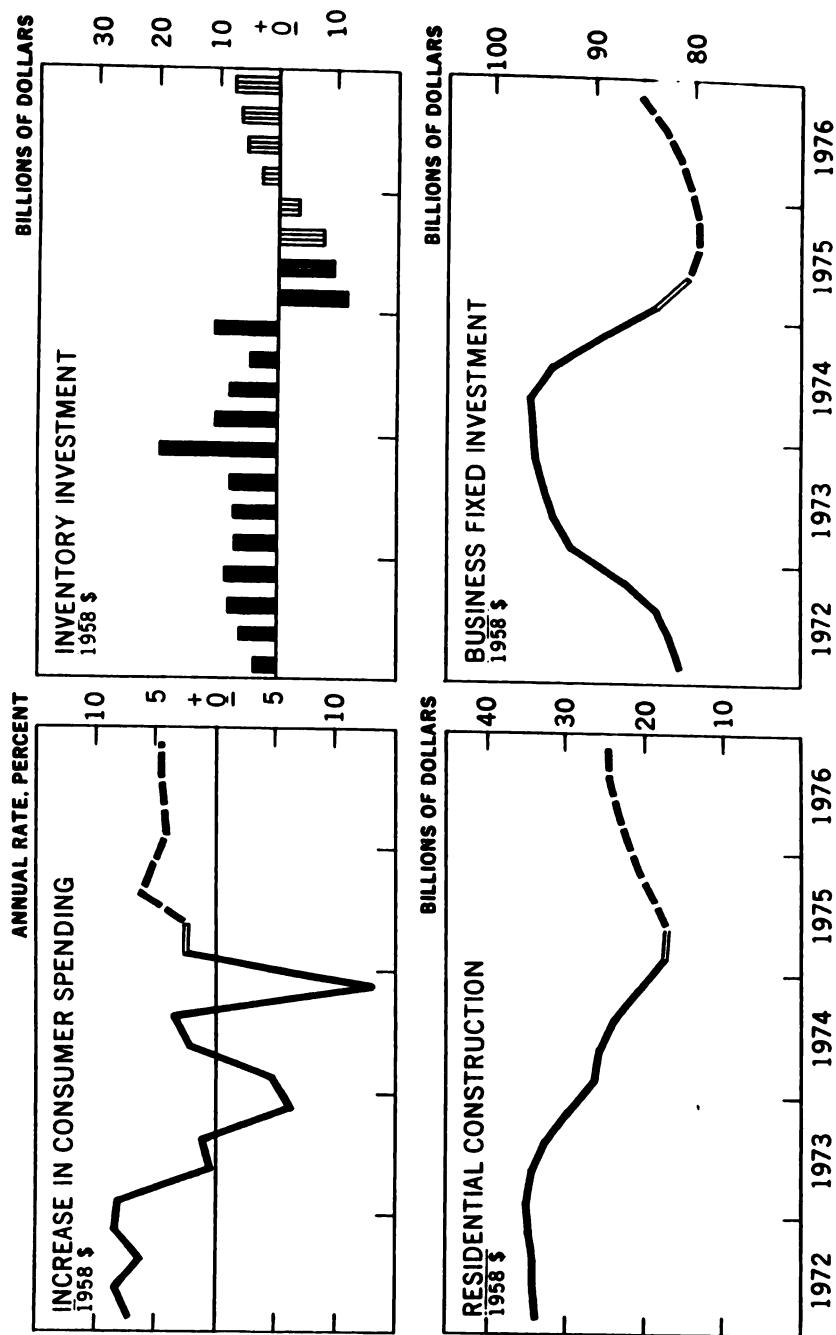
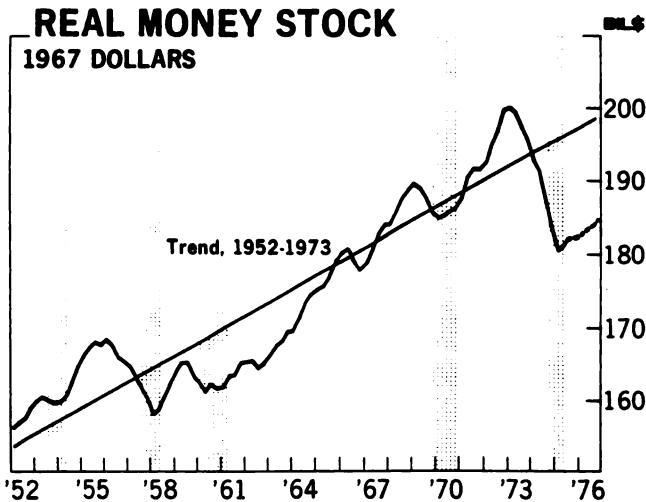


Figure 38.5



the basis for exceptional vigor in any of these critically important areas of the economy.

....

Financial Developments: Mr. Kichline

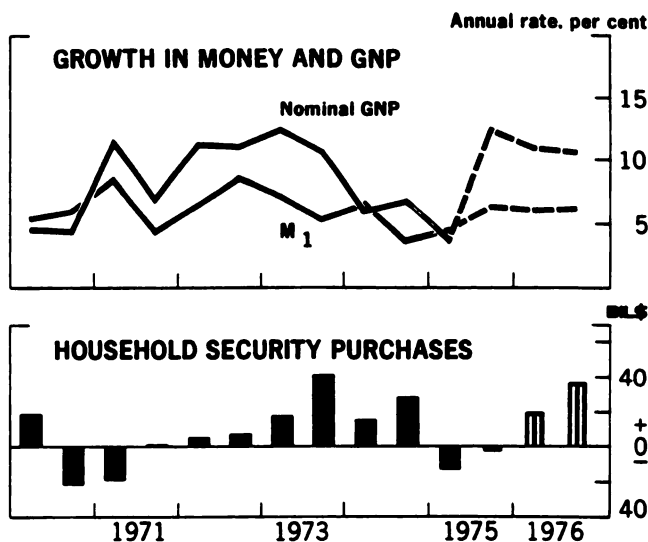
During the past several years, the effects of inflation have worked in a variety of ways to curtail domestic economic activity. One of these ways is recorded in the behavior of the real money stock.

The stock of real money balances—nominal M_1 divided by the CPI—fell sharply from early 1973 through the first quarter of this year, reflecting rapid inflation and relatively moderate growth in nominal M_1 , and is now substantially below its longer-run trend. This decline in real money stock was accompanied by a general erosion in liquidity positions, by an increased reliance on credit markets for needed finance, and by an intensification of pressures in financial markets.

In the current quarter, the real money stock will show a rise for the first time in more than two years, and continued growth is projected through the end of 1976, given an assumed rise in M_1 averaging 6.25 percent at an annual rate and a progressive slowing in the rate of advance in prices. But the growth in real money balances is appreciably less than the average increase during comparable periods of economic recovery; and the stock of money in real terms remains well below the trend path.

Another way of looking at the effects of monetary policy is to compare growth in nominal GNP with the expansion of M_1 . In the first half of this year, M_1 grew somewhat more rapidly than nominal GNP, as usually happens in a recession. The decline in the income velocity of money was accompanied by

Figure 38.6



substantial reductions in short-term rates of interest. Through the end of 1976, however, economic recovery will generate a rise in income velocity of typical cyclical dimensions. In the past, such an increase usually has been associated with considerable pressures on interest rates.

Our flow-of-funds projection tends to confirm this. To balance overall demands for and supplies of funds, households will need to shift from net liquidation of securities in the first half of this year to sizable purchases by late 1976. To induce households to shift their acquisition of financial assets from deposit-type claims to market securities, interest rates will have to rise.

How much rates will have to go up is hard to say. Our estimates reflect judgmental views based on the results of our flow-of-funds projection as well as our econometric model. We believe that the commercial paper rate is likely to be moving up to about 8.25 percent in the final quarter of this year and to perhaps 10.5 percent in the fourth quarter of 1976, given the GNP projection and our monetary assumptions. Long-term interest rates would be expected to show much more moderate increases, because inflationary premiums should be declining and demands on long-term securities markets are expected to moderate somewhat from recent exceptional levels.

Financing the projected expansion in GNP will require a considerable rise in the total volume of funds raised by nonfinancial sectors. But the sectoral composition of borrowing is expected to be markedly different from that in previous years. Net borrowing by the Federal sector in 1975—at \$80 billion—is huge in absolute terms and relative to total credit market flows, amounting to about 45 percent of total funds raised, or roughly twice the share of the previous peak postwar years.

Figure 38.7

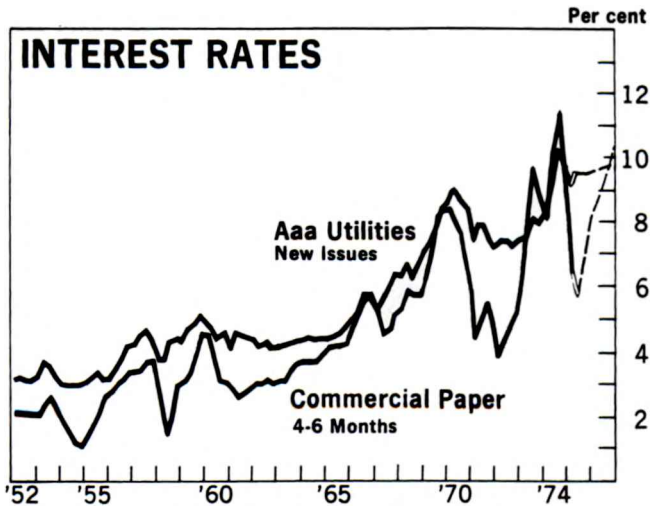
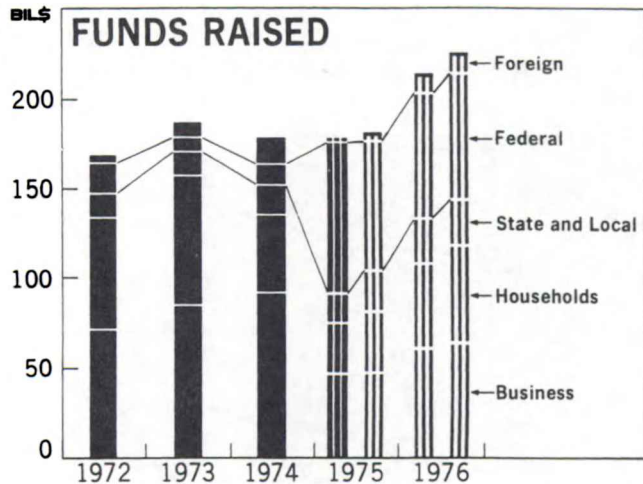


Figure 38.8



Large Federal borrowings have been readily absorbed by financial markets so far this year because of the sharp recessionary drop in private credit demands. The bulk of this reduction has been in the business and consumer sectors. But as the recovery commences, private credit needs will expand, and the combination of public and private credit demands in 1976 is projected to reach new peaks.

The magnitude of the rise in business credit demands will depend on the relation between capital expenditures (including inventories) and internal funds of nonfinancial corporations. During the recession, the external financing gap shrank because the net liquidation of inventories and the reduction of fixed investment reduced total investment expenditures much more rapidly than the reduction in internal cash flow.

Figure 38.9 Nonfinancial Corporations: Capital Expenditures, Internal Funds

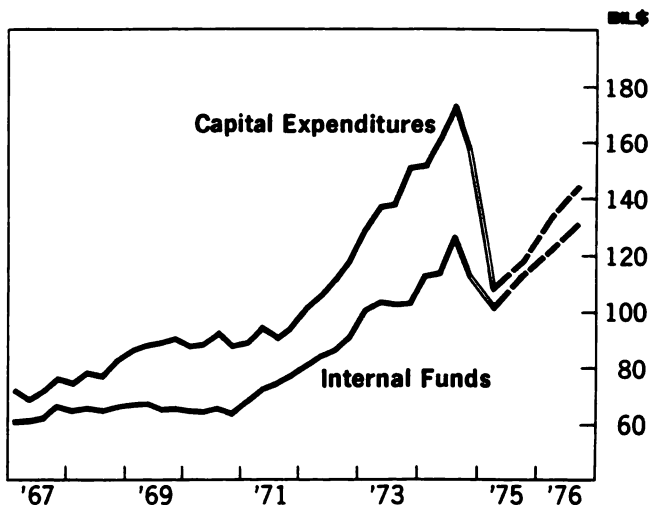
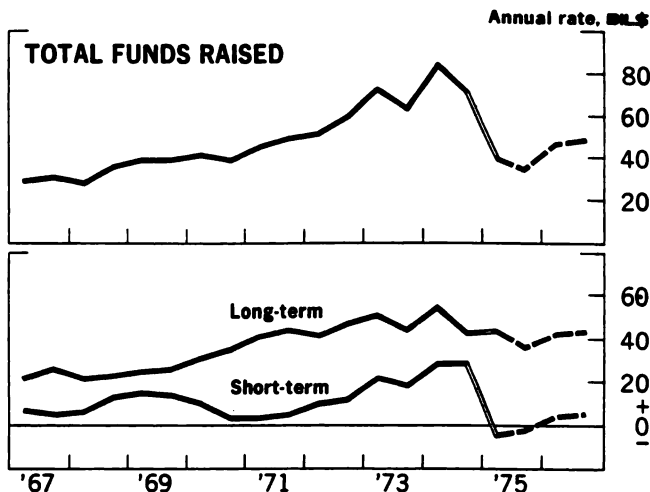


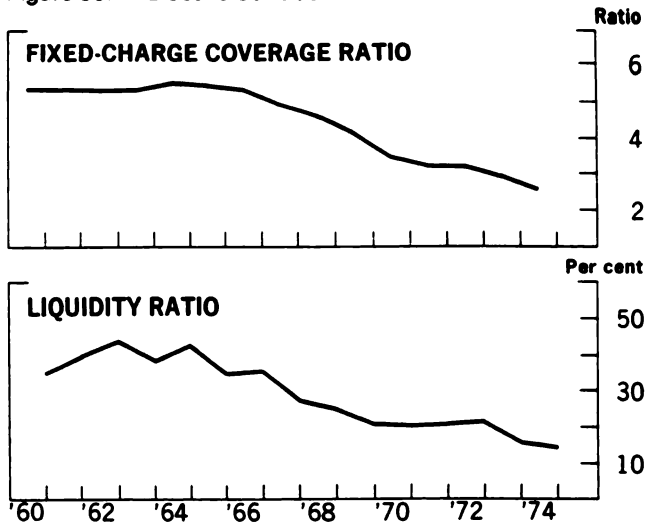
Figure 38.10 Nonfinancial Corporations: Total Funds Raised



In the second half of this year, capital expenditures are projected to begin rising again, although the projected improvement in profits is strong enough so that the external financing gap remains moderate compared with the past few years.

Consequently, total funds raised by nonfinancial corporations are projected to rise rather gradually over the period ahead. Businesses are expected to focus their demands for funds on long-term markets, as they have in recent months, in an effort to strengthen their capital and liquidity positions.

Figure 38.11 Electric Utilities

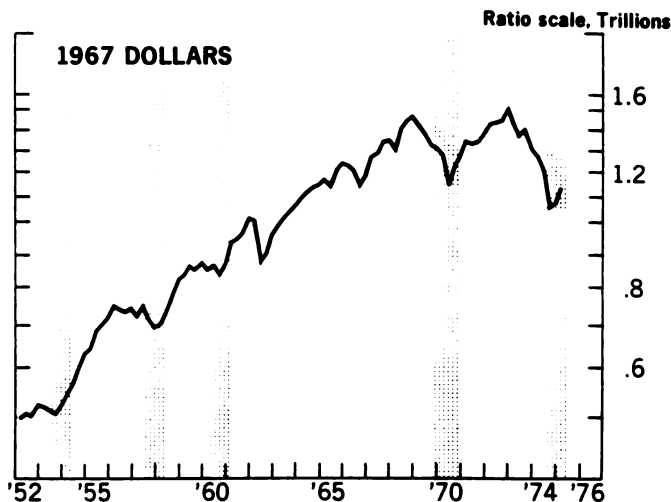


While the restructuring of financial positions has already improved the status of many companies, there are still numerous individual firms and some industries confronting serious financial problems. For example, electric utilities have experienced a severe decline in the ratio of earnings to fixed charges—mainly interest—and also a serious erosion of liquidity. The pressures on this industry have not disappeared; investor-owned companies have found their bond ratings reduced, and rate relief continues to lag. These are important financial impediments to the participation of this industry in economic recovery.

In the consumer sector, too, financial considerations may limit the rise in spending. The real value of total financial assets held by households has declined very substantially. Rapid inflation, together with the sharp drop in stock prices in 1973 and 1974, have reduced the real value of household financial wealth to levels no greater than those prevailing a decade ago. Since late last year, real financial assets of households have again been rising, but it will take a very large increase—and probably an extended period of time—before previous peak levels are reached again.

There has also been significant improvement recently in the liquidity positions of financial institutions and in attitudes of investors. But the easing of conditions in credit markets during the recession has not yet restored previous financial positions, and market participants still remain conservative in their lending policies and quality-conscious. At commercial banks, for example, the increase in liquidity positions from the low in mid-1974 has been moderate, and banks are still relying rather heavily on borrowed or interest-sensitive funds. There is probably a good distance to go before banks achieve what they view as comfortable financial positions.

Figure 38.12 Household Total Financial Assets



The emphasis that investors give to credit quality continues to show up in the large risk premiums attached to borrowings of lower-rated companies and thus to the spread between Baa and Aaa bonds. Although the flow of investor funds into lower-grade bond and commercial paper issues has increased somewhat in recent months, risk premiums are still large, and some firms have not found receptive markets.

Considerations such as these suggest that financial market developments in the period ahead are not likely to be an influence conducive to an unusually vigorous recovery. The most important channel through which credit restraint will dampen recovery, however, will probably continue to be the effects of rising market interest rates on savings flows and the markets for housing finance.

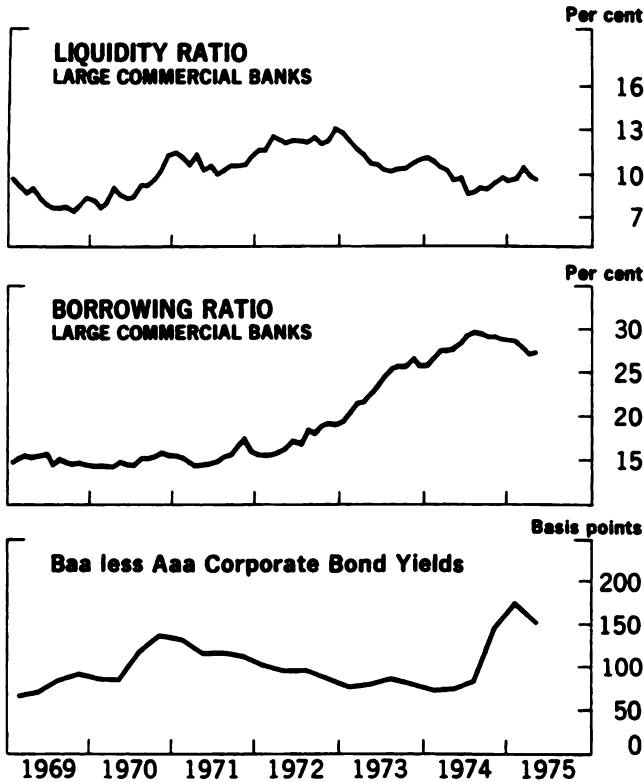
At savings and loan associations, in the absence of a change in interest rate ceilings, rates on savings accounts and certificates will become less attractive relative to rates on market securities as the latter move higher, and this is expected to result in a decline in growth of deposits at S&Ls to about 7 percent, at annual rates, by the latter part of 1976. This is a much better performance, given market interest rates, than in previous periods of disintermediation, in part because of the restrictive withdrawal penalties attached to the sizable volume of time certificates at S&Ls. Even so, our projections suggest that by late 1976, credit restraint will be adding to nonfinancial factors in limiting the recovery in housing.

....

Conclusion: Mr. Partee

The evidence we have reviewed today, it seems to me, all supports the view that the coming economic recovery will be on the moderate side. The prospects for

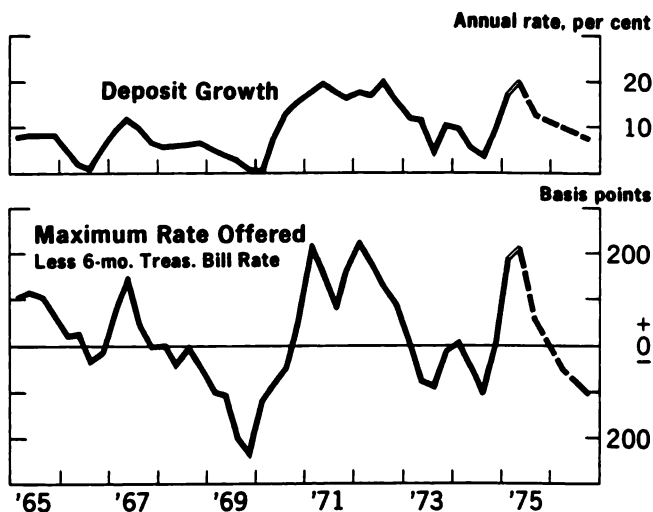
Figure 38.13



housing, for auto sales, and for capital investment—though all improving—do not seem sufficiently strong to support boom levels of activity in these areas. Business inventories remain relatively high in physical terms, which would seem to limit the room for a renewed inventory buildup on any really substantial scale. Nor does the possibility of strong stimulus in our foreign trade sector look like a very good bet, given the cyclical configuration of the world's major economies, the oppressive continuing burden of meeting the bill for foreign oil, and the availability of ample unused productive capacity and labor resources almost everywhere.

A receding rate of inflation does promise relief to the hard-pressed consumer, and this could conceivably spark more of a resurgence of optimism and of spending—once a recovery is under way—than we have allowed for. Continued moderation in the inflation rate will also be helpful in holding down long-term interest rates and should work to improve attitudes in financial markets generally. But financial factors do not appear particularly promising. Lenders continue very selective in risk-taking and there will continue to be an ample volume of

Figure 38.14 Savings and Loans



government and other high-grade securities to buy. Altogether, I find it hard to question the conclusion that this recovery has less going for it than ordinarily has been the case in the past.

If one accepts the conclusion that the economic recovery is likely to prove moderate, the question arises as to what could or should be done to attempt to invigorate it. First, we believe that there is room for a more rapid expansion, given the idle resources that exist at present, without running the danger of any significant heightening of inflationary pressures. For labor markets, the continuation of an unemployment rate in excess of 8 percent makes it clear that there are ample human resources to permit greater real output. To test the hypothesis in the case of industrial capacity, we considered the projected course of the industrial production index in relation to its trend growth over the past quarter of a century. In the fourth quarter of 1976 the projected index is still 12.5 percent below trend, which is as large a gap as existed at the low point of most previous postwar recessions. Although such a comparison does not provide direct evidence as to the availability of usable capacity, the large shortfall does suggest that there should be a considerable latitude for a stronger industrial recovery.

Accordingly, we decided to estimate the effects over the projection period of a more stimulative economic policy package. An additional \$15 billion of fiscal stimulus was assumed for calendar 1976, made up of another tax rebate next spring, and by \$7 billion in additional Federal outlays that include special expenditures of about \$2.5 billion for another bonus to social security recipients or similar low-income groups and a moderate sustained increase in Federal purchases associated with public works or other spending programs. We also assumed that monetary policy would be somewhat more expansive beginning in

Figure 38.15 Policy Alternatives

Fiscal Policy \$15 billion additional fiscal stimulus in calendar year 1976 • \$8 billion rebate on 1975 tax liabilities • \$7 billion in additional expenditures Monetary Policy Growth of M_1 at a 7 1/2 % annual rate
--

the second half of this year, as indexed by M_1 growth from that point at a 7.5 percent rate.

Given these policy assumptions, we would expect somewhat stronger growth in real GNP throughout, but particularly in the spring and summer of next year where the additional fiscal stimulus is concentrated, and then some moderation in the rate of expansion as the fiscal effect wanes. For the six quarters combined, the average growth rate might be on the order of 7 percent—1.5 points higher than in the base projection. As a result, the unemployment rate would decline more rapidly, dropping by about a full point during 1976 to slightly under 8 percent in the final months of that year. We believe that there would be very little effect on the rate of inflation over the projection period with the fixed-weight deflator rising at about a 5 percent pace in the second half of 1976, though there probably would be somewhat more impact on the price level later on. Our econometric model indicates that the level of prices in the alternative policy assumption would be on the order of 0.75 percent higher than in our base projections by the end of 1977.

I might add that we would not expect the level or pattern of interest rate changes to be greatly different in the alternative projections. The somewhat greater sustained rate of monetary growth just about offsets the effects of the larger Federal deficit and increased gross national product in the more stimulative variant. Nor, for that matter, would the actual Federal deficit turn out to be anything like \$15 billion higher, since the larger GNP generates additional tax revenue. The indicated net effect would be to raise the deficit by about \$6 billion, to a total for calendar 1976 of \$70 billion.

[Note: The tables at the end of this reading, 38.1, 38.2, and 38.3, taken from the same source, present the flow-of-funds data of the basic projection.—Ed.]

Figure 38.16

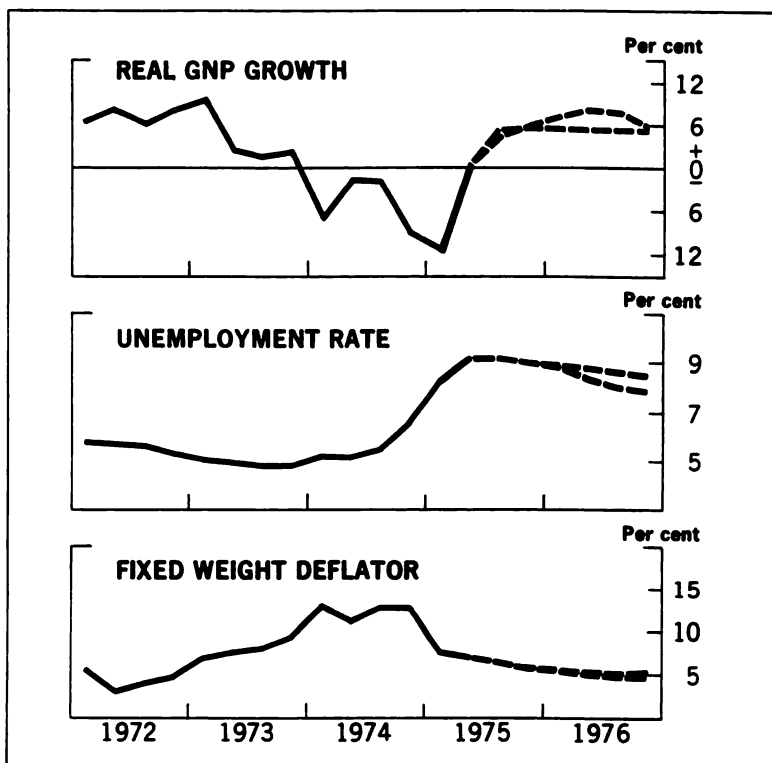


Table 38.1

Funds Raised in Credit Markets (seasonally adjusted annual rates: \$ billions)

	1973	1974	1975		1976	
			H1	H2	H1	H2
1. U.S. Government ¹	9.7	12.0	86.1	73.4	71.1	70.6
2. State & local governments	12.3	16.6	17.1	23.5	23.8	24.7
3. Nonfinancial business	77.5	85.3	40.6	36.8	48.5	50.6
4. Short-term ²	39.1	44.9	-7.6	-4.1	5.6	7.3
5. Long-term ³	38.4	40.4	48.2	40.9	42.9	43.3
6. Residential mortgages	51.7	39.4	35.3	43.4	51.3	55.5
7. Consumer credit	22.9	9.6	-5.4	-1.0	3.1	6.3
8. Other	13.2	16.7	3.1	5.3	15.8	18.0
9. Total—nonfinancial sectors	<u>187.4</u>	<u>179.6</u>	<u>176.8</u>	<u>181.4</u>	<u>213.6</u>	<u>225.7</u>
10. Sponsored credit agencies ⁴	19.6	22.1	4.6	-1.0	1.8	-.1
11. Credit & equity borrowing of private financial institutions	32.4	16.1	-10.4	*	8.6	11.1
12. Total—all sectors	<u>239.4</u>	<u>217.8</u>	<u>171.0</u>	<u>180.3</u>	<u>224.0</u>	<u>236.8</u>

1. Direct marketable and nonmarketable debt, savings bonds, and issues by on-budget and off-budget agencies.

2. Business bank loans and open-market paper.

3. Bonds, equities, and nonresidential mortgages.

4. FNMA, FHLB, FICB, Banks for Coops, Land Banks, and GNMA guaranteed mortgage backed securities.

Note: Totals may not add due to rounding.

Table 38.2

Funds Advanced in Credit Markets
 (seasonally adjusted annual rates: \$ billions)

	1973	1974	1975		1976	
			H1	H2	H1	H2
1. Private financial institutions—total	172.3	138.4	127.8	130.5	146.3	145.3
2. Domestic commercial banks & affiliates	86.7	64.4	33.4	48.9	60.6	62.9
3. Thrift institutions ¹	35.4	27.6	52.3	37.6	36.7	30.7
4. Insurance & pension funds ²	37.0	40.9	42.0	42.3	44.9	45.3
5. All other ³	13.2	5.5	0.1	1.7	4.1	6.4
6. U.S. Government	32.5	37.8	30.7	19.8	19.2	16.3
7. Direct ⁴	3.0	7.5	14.6	7.7	5.5	3.9
8. Sponsored credit agencies ⁵	20.3	24.1	7.2	1.2	4.1	2.3
9. Federal Reserve	9.2	6.2	8.9	10.9	9.6	10.1
10. Foreign	3.5	12.1	19.4	15.2	20.0	20.9
11. Households	21.5	20.9	-18.6	-4.7	16.5	32.6
12. All other ⁶	9.6	8.6	11.7	19.5	22.0	21.7
13. Total funds advanced in credit markets	<u>239.4</u>	<u>217.8</u>	<u>171.0</u>	<u>180.3</u>	<u>224.0</u>	<u>236.8</u>

1. Savings and loan associations, mutual savings banks, and credit unions.

2. Life and other insurance companies, private and public pension funds.

3. Finance companies, REITS, open-end investment companies, securities brokers and dealers, and foreign banking agencies in the United States.

4. Lending by on-budget and off-budget agencies.

5. FNMA, FHLB, FICB, Land Banks, Banks for Coops. Includes GNMA guaranteed mortgage backed securities.

6. Businesses and State and local governments.

Note: Totals may not add due to rounding.

Table 38.3

Banking and Monetary Variables (percentage annual rates of change)

	1972	1973	1974	1975		1976	
				H1	H2	H1	H2
Total Reserves	10.8	7.8	8.6	-4.1	7.0	6.5	6.5
Concepts of Money							
M ₁	8.7	6.1	4.8	5.7	6.4	6.2	6 1/4
M ₂	11.1	8.8	7.2	10.1	9.4	8.1	7.0
M ₃	13.2	8.8	6.8	12.4	10.8	8.3	7.0
Time Deposits at Commercial Banks	15.7	16.2	15.1	7.6	10.3	9.8	9.3
Consumer-type	13.5	11.4	9.4	13.8	11.7	9.5	7.5
Total Bank Credit ¹	14.6	13.5	9.2	4.8	8.5	9.8	9.6
Nonbank Savings Accounts ²	16.8	8.9	6.0	16.2	12.7	8.8	7.0

1. Adjusted for loan sales to bank affiliates.

2. Includes credit union shares.

Note: Data for reserves, money supply, and time deposits at commercial banks are on a daily-average basis. Bank credit and nonbank savings accounts are on an end-of-month basis.

HENRY KAUFMAN, JAMES McKEON,
AND DAVID FOSTER

Financial Market Projection for Private Financial Institutions

(1979)

Summary and Conclusions

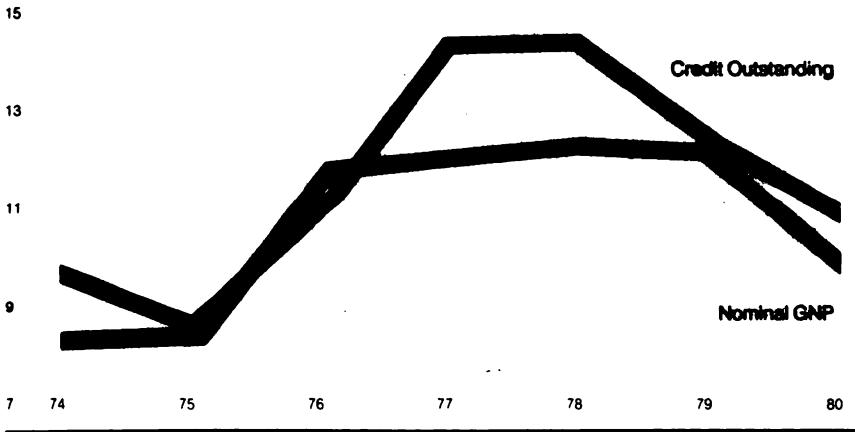
In 1980, the financial markets in the U.S. will have to absorb another very large volume of credit demands. For despite the onset of economic contraction, the current very high rates of inflation will persist and probably even accelerate.

Rising energy costs, strong wage demands, continuing unfavorable expectations about price stability in the long run, and political and international economic developments should offset the impact of a weakening economy. In the early stages of recession, the level of new credit requirements typically rises to accommodate inventories and receivables and offset the slowdown in income; concurrently, savings also slow. Moreover, whereas in 1974–75 the liquidation of large inventories and receivables brought about a dramatic and sudden end to credit needs and continuing upward pressures on inflation and interest rates, the current business expansion could well end in a sputtering, piecemeal recession.

We expect economic activity to begin to contract sometime in the first half of 1980 and continue declining throughout the year, producing a year-to-year fall in real GNP of roughly 1.5 percent. Nominal GNP, however, will still rise about 9.5 percent compared with an estimated 11.8 percent in 1979. This will be reflected in a moderate deceleration in total credit expansion from about 12.5 percent in 1979 to 10.5 percent this coming year.

Reprinted, with permission, from Henry Kaufman, James McKeon, and David Foster, *1980 Prospects for Financial Markets* (New York: Salomon Brothers, 1979), 1–16. Several of the supporting tables have been omitted.

Figure 39.1 Markets and Economy: Percent Growth Rates in Nominal GNP vs. Credit Outstanding

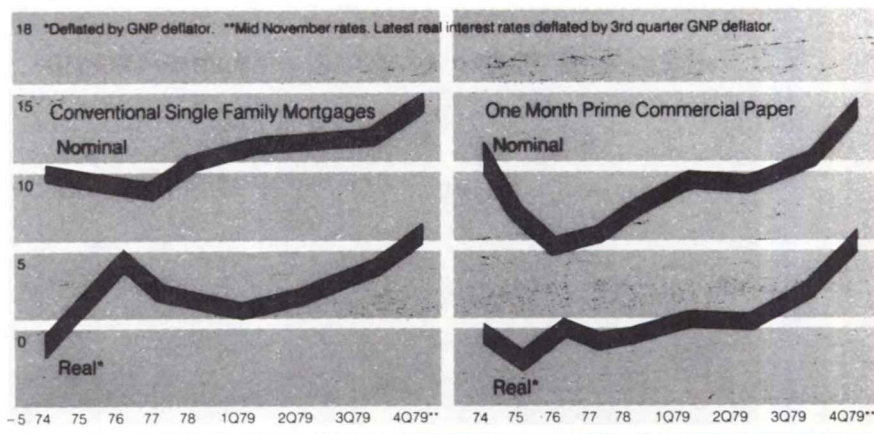


We anticipate consumption to hold up until employment starts to weaken significantly, or the year is well under way. Housing demand and construction will fall at least temporarily, with starts declining from 1979's 1.75 million units to about 1.47 million. Plant and equipment spending should hold up longer, but fall more precipitously thereafter. As measured by the Commerce Department's survey, capital spending will show a year-to-year drop of at least 2 percent in real terms, but a rise in current dollar terms of some 8 percent. Sometime late in the year, inventories and receivables will be pared back to reflect slower consumption and the development of real financing costs (see Figure 39.2). The slowdown in economic activity will produce a deterioration in both federal and state and local government budgets.

The combination of domestic inflation, an economic slowdown, and external pressures on the dollar will create enormous problems for policy makers, especially those at the Federal Reserve. We suspect that it will not be quite as easy to persist without letup as it was to initiate a tough new monetary policy. Any letup, however, would risk a temporary resurgence of expectational demand, which would then have to be discouraged anew. As the year progresses, there will all too probably be a growing number of near and actual failures both in the business and financial communities.

Business external financing needs will fall only moderately, totaling \$112 billion—greater than any but 1979's \$123.5 billion. Internal cash generation will fall as reported profits drop 11 percent. Many firms will also try to restore liquid asset levels, especially as liquidity ratios have fallen to below the previous secular lows of 1974 in most industries. This will also produce a marked redirection of corporate financing toward the capital market and away from short-term sources of credit, especially later in the year.

Figure 39.2 Emergence of Real Positive Interest Rates in Crucial Markets



We expect, for example, to see a surge in the volume of net new corporate bond financing from this past year's estimated \$30.9 billion to almost \$40 billion. Most of this rise will be in public offerings by industrial and mining issues. Medium-term issues will rise, but fall short of 1975's record volume. The volume of corporate takeover-connected acquisitions of stock (which in recent years has offset a growing part of fairly large new stock issues) will probably be cut back significantly as bank financing becomes less available.

Personal consumption and investment in real estate will feel the effects of falling real income, the emergence of real interest rates, periodic shortages of gas and energy, and much reduced credit availability. Sometime around midyear perhaps, consumption will fall more sharply. The reduced availability of mortgage finance will be felt primarily in a sharp slowdown in resales of older homes.

The U.S. Treasury will have to finance a \$50 billion deficit—about \$20 billion larger than in calendar 1979. This reflects a pickup in defense, transfer, and interest expenditures and a deceleration in the rate of increase in tax revenues. We also expect some fiscal stimulus to be enacted, but less than half that legislated will take effect in the coming year. In addition, we anticipate another large rise in the net new issuance of federal agency guaranteed mortgage pool securities, but also a slowdown in the issuance of sponsored agency financing. Total agency financing in the public market will remain relatively heavy, at more than \$40 billion.

State and local government financing will also be inflated by the budgetary effects of a slowdown in the economy. Gross new bond flotations will rise from this past year's estimated \$38 billion to nearly \$42 billion. This should be partly offset, however, by the increasing level of maturities. Note issuance will also be on the increase.

Savings inflows to thrift institutions will remain under heavy competitive pressures for much of the coming year. Such pressures are even likely to increase in the first half. When interest rates start to recede, moreover, a more sophisticated saving public will continue to look at alternatives, which should limit the degree and speed of reintermediation. Total net new mortgage take-downs by all thrift institutions will decline some \$9 billion from 1979's \$53 billion. Originations, however, will not fall as much as net takedowns because of greater use of secondary market facilities by lenders.

Contractual institutions for the most part will experience continued growth in 1980. The major exception is property liability insurance companies, now at the start of one of their periodic earnings declines. This group will shift markedly from tax-exempts and equities to corporate and U.S. government debt in 1980. Life insurance companies will continue to take down large amounts of corporate bonds, mortgages, and mortgage-backed securities. Pension and public retirement funds will step up their purchases of, especially, equities, corporate bonds, and mortgage-backed securities.

Commercial bank credit expansion will slow somewhat from 1979's record pace in response to the tougher monetary stance of the Federal Reserve. In dollar terms we expect an increase in loans and investments outstanding of \$100 billion, versus \$124 billion estimated for 1979. There will be increased pressure on bank security portfolios in 1980, especially U.S. governments and tax-exempts. There will be significantly less demand deposit growth, but new marginal reserve requirements on banks' money market liabilities will limit the usual relief from that quarter. Business, mortgage, and consumer loans will not increase as much as in 1979, but the slowdown will be relatively modest all the same.

The implications for interest rates of all these developments are as follows: Because of the acceleration of inflation and credit demands at least in the first part of 1980, as well as probable pressure on the dollar in exchange markets, interest rates in the U.S. will continue to rise at least early in the year, setting new postwar highs. The peak in short-term rates will probably precede that in longs by at least several months. The extent of any decline thereafter will also be limited, at least until the start of a general financial reliquification.

Enormous Challenges to the Economy

The problems and uncertainties confronting the U.S. economy at the close of 1979 are more formidable and perplexing than at any time since World War II. The not entirely cyclical nature of these problems will be reflected in financial markets throughout 1980.

The major threat to the economy and markets is the persistence of very high levels of inflation. Nevertheless, there are no quick, decisive solutions at hand. Strong wage demands to "catch up" with past inflation will provide new im-

petus. Another spectacular increase in energy costs is in the offing, even ignoring the potential disruptive impact of international political mischief on both prices and flows of petroleum and/or capital. Furthermore, domestic resistance to traditional measures to cope with inflation may well build up in an election year. Finally, there are strong expectational elements working within the U.S. economy and financial markets, distorting the cyclical patterns of the past; these proinflationary activities challenge the monetary authorities' persistence and determination to a perhaps unanticipated extent.

Accordingly, we expect the rate of inflation to resist downward pressure and perhaps even accelerate for much of the coming year. Even with the onset of an unqualified downturn in the volume of economic activity starting sometime in the first half of 1980, therefore, the continuation of very large, if somewhat diminished, new credit demands is virtually assured.

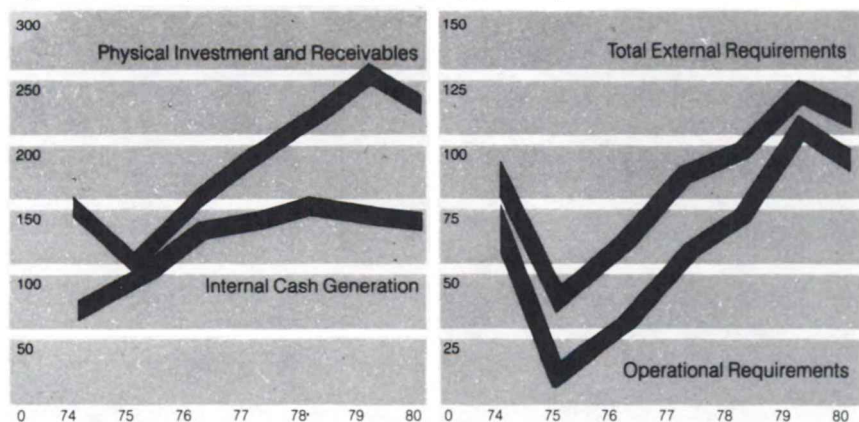
On a year-to-year basis, we expect real GNP to decline by roughly 1.5 percent but expect inflation as measured by the GNP deflator to increase to 10.0 percent or more. The resulting deceleration in the rate of growth of nominal GNP from this year's estimated 11.8 percent to about 9.5 percent in 1980 is mirrored in the moderate slowdown in the very high rate of credit creation from 12.5 percent in 1979 to 10.5 percent (see Figure 39.1).

The consumer is one of the keys to 1980. We believe that the pace of consumption will remain quite high for as long as the employment situation remains strong. In the 1974-75 recession, employment held up fairly well until the second half of that period. Indeed, with each cycle, the real falloff in employment lags the peak in activity more and more. If this pattern holds, consumption should remain strong well into the year, and the widely anticipated recovery of household savings rates will be delayed until possibly after mid-1980. This coming year should also see, at some point, a temporary arrest to the many-faceted demand for housing and mortgage credit at whatever cost. Mortgage rates on a before-tax basis are now *well* above the general rate of inflation for the first time in years, and the reduced *availability* of private sources of credit is likely to substantially slow turnover of homes in the secondary market, thus affecting for the time being expectations of future price appreciation.

Housing construction as well as demand, accordingly, will slow next year, once the backlog of financing commitments is worked down. Permit activity and new starts will be especially affected, with starts falling about 15 percent to 1.47 million units from 1.75 million units this year and 27 percent from 1978's cyclical high of 2.02 million units. The number of completions and units under construction will fall more slowly.

As the falloff in economic activity becomes more apparent, pressures for some form of fiscal relief from the Federal Government will gain. Our belief is that fiscal stimulation will be moderate at first and that most of the actual relief to individuals and business firms would be delayed until early 1981. Nevertheless, budgetary revenues will be rising less rapidly relative to expenditures than

Figure 39.3 Corporate Financing Needs (\$ billions)



in either 1978 or 1979. Continuing large new Federal credit activities, designed to minimize the effect of reduced savings flows on housing construction, would also tend to retard the economic slowdown.

Business spending for plant and equipment will continue rising in real terms through the first half or so of 1980, despite the start of a decline in most other activity. Thereafter, however, these expenditures will fall off rapidly, especially affecting machinery, tool, and vehicle orders and deliveries. For the year as a whole, total capital spending will rise about 8 percent, falling 2 to 3 percent in real terms as measured by the Commerce Department's survey.

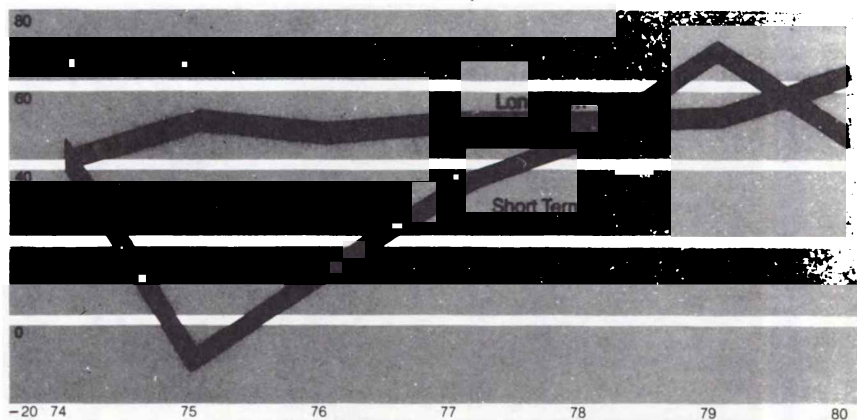
Sometime late in the year, business firms will try to pare back inflated inventories and receivables to bring them into line with lower levels of sales. It is altogether far too likely that the financial pressures now in evidence (and likely to increase through early 1980) will produce a certain amount of discomfort, financial failure, and consolidation in the economy and financial community.

Business Financing to Stay at High Level

The coming year will produce very large external financing needs for business firms, totaling \$112 billion. This would not be far behind 1979's record \$123.5 billion. Indeed, were it not for some probable attempts to reduce inventories and receivables toward the end of 1980, total corporate external financing would approach or even exceed this year's level.

While plant and equipment expenditures will rise some \$17.5 billion in current dollars (declining in real terms), inventories should remain unchanged for the year as a whole, as compared with an estimated net accumulation of \$25.5 billion in 1979. And the decline in physical investment will be partly offset by a decline in internal cash generation, reflecting an 11 percent drop in pretax re-

Figure 39.4 Short vs. Long Term Corporate Financing
(annual net issuance, \$ billions)



ported profits and the carryover of higher 1979 tax liabilities into early 1980 payments. Many firms, moreover, will try to build up their liquid asset holdings as the year progresses. Most business corporations have permitted their liquid asset ratios to decline below 1974 record lows; a general reliquification such as occurred in the 1975–76 period will begin sometime in the coming year.

These developments, reflected in Figure 39.3, will create a \$112 billion gap between total uses and internal sources of funds for nonfinancial business corporations. To bridge that gap, corporations will rely on a more balanced mix of financing alternatives than was the case this past year. In 1979, business firms' use of such short-term credit facilities as commercial banks, finance companies, and the paper market jumped to nearly \$70 billion, and their use of the mortgage, bond, and stock markets leveled out at about \$50 billion. In 1980, by way of contrast, we believe that they will obtain roughly \$65 billion from long-term markets and \$50 billion from short-term financing sources. The anticipated shift toward long-term financing reflects a desire to restructure corporate balance sheets, especially to fund out short-term debt and restore equity ratios.

This means a sharp acceleration in the pace of corporate bond issuance, particularly in the public market. We expect gross new public offerings to rise from an estimated \$23.9 billion this year to more than \$35 billion in 1980. The bulk of the increase would reflect a doubling of the volume of offerings by industrial firms. This would even exceed 1975's record pace of issuance for these industries. The public utilities and communication industries, on the other hand, are expected to increase their bond issuance modestly, if at all; unlike industrial issuers, the balance sheets of private electric power companies have not deteriorated significantly since 1976–77, which marked a remarkable recovery from a period of difficulties in 1974. While we expect a rise in medium-term note financing in 1980, we do not anticipate a record level (see accompanying

Figure 39.5 New Corporate Bond Issues, by Type
(gross new issuance, \$ billions)

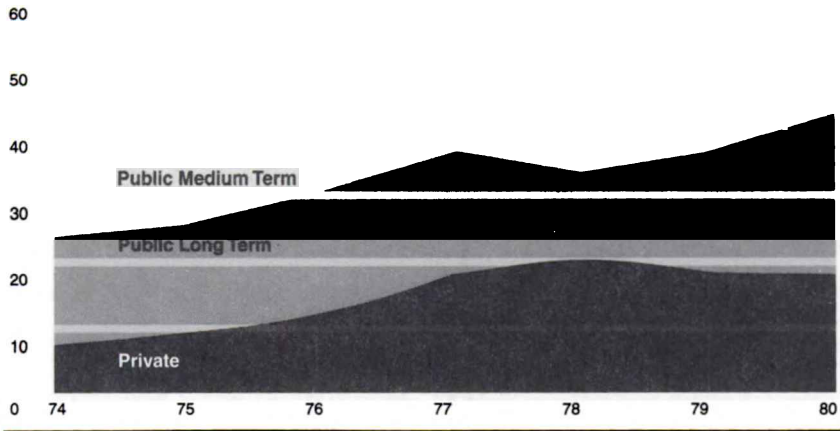


figure). In late 1974, 1975, and early 1976, the volume of medium-term bonds was swollen by offerings of those utilities unable to find a market for longer-dated paper because of credit considerations. In 1980, medium-term offerings by and large will represent a conscious choice of financing strategies.

Private placement volume will not be appreciably different from 1979's. The major institutions with whom such paper is placed will increase their investment in other areas.

While the net volume of domestic corporate bond issuance will rise sharply in 1980, even allowing for a fairly heavy schedule of maturities and retirements, the increase will not be much augmented by foreign and international bond issuance in the U.S. This past year saw a drop in the volume of Canadian, Yankee, and international issuance here, and we do not expect more than a slight recovery.

The volume of corporate stock issues has been relatively heavy in recent years, but this has not produced significant increases in stock held by the public. Instead, the new issuance has been increasingly offset by a rising level of corporate stock buybacks. This has consisted of corporations' purchasing their own stock and corporate bids for the stock of takeover candidates.

The latter has risen sharply, especially in the past year or so, because of the ready availability of borrowed funds and continuing low stock prices relative to book value for many firms. We expect that credit for this kind of transaction will become less available in 1980. As a consequence, the net new issuance of corporate preferred and common stock will rise, approaching the levels of 1975-76. We expect that the utility and telephone communication industries will continue to expand their successful dividend reinvestment programs in the coming year.

In evaluating the impact of these factors on financial markets, it is important

to recognize that the first half or so of 1980 will probably differ significantly from the last part of the year. At least in the first several months of the year, short-term financing will continue to increase, particularly if there is any tendency toward somewhat lower interest rates. It is only with the reduction of corporate inventories and receivables, sometime in the second half perhaps, that the volume and pattern of corporate financing will alter significantly. Thus for the year as a whole, our figures show a somewhat blurred picture, especially compared with the sharp turn in corporate financing between 1974 and 1975.

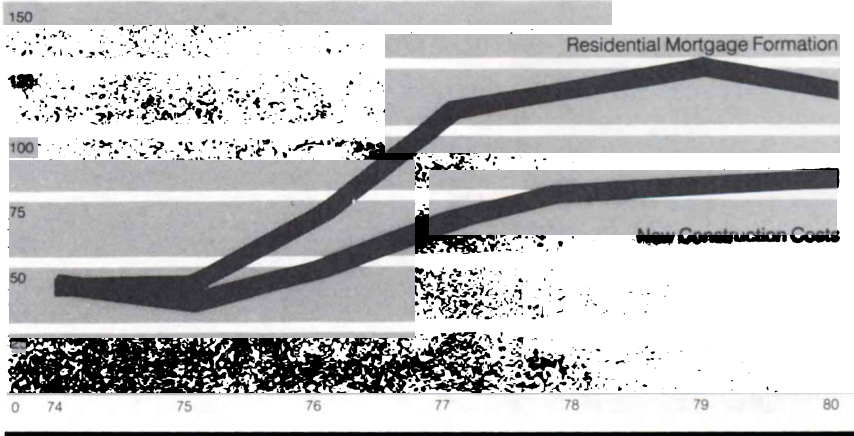
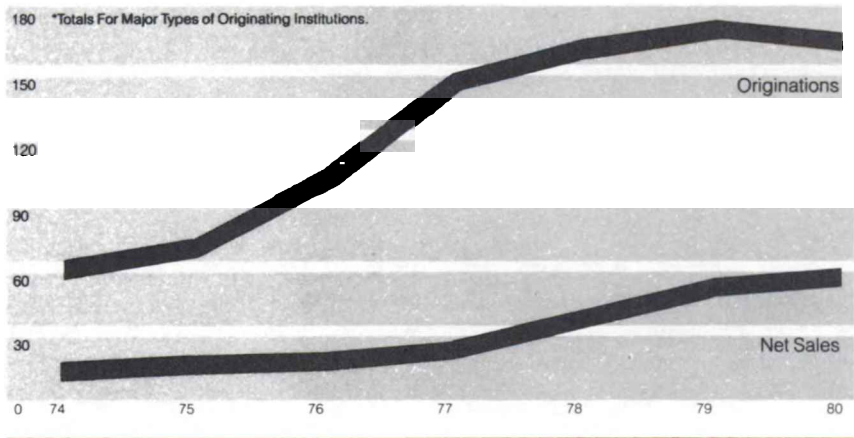
Consumers: Less Wind in the Sails

A combination of factors including the emergence of real interest rates (see Figure 39.2), periodic shortages of refined petroleum products, an eventual squeeze on available credit, and growing uncertainty will take a good part of the remaining steam out of personal consumption and investment at some point in the coming year. That point, nonetheless, is not yet imminent; it will occur sometime after the prospects for employment darken, probably not before mid-year. And even then, consumption will fall less than other forms of spending.

Except in auto purchases, there are still signs of the continuing inflationary psychology at work. Large commercial banks, for example, continued to expand consumer installment lending at a very rapid pace weeks after the Federal Reserve's new emphasis on restricting monetary growth directly. This will probably continue through the early months of 1980, but *demand* for new consumer credit will probably fall sharply sometime in the second half of the year, despite a faster drop in real personal income than in consumption. The growth in installment credit, therefore, which declined roughly 10 percent compared with 1978, will fall another 25 percent in 1980. This compares with a decline of more than 60 percent in 1974.

From the perspective of financial markets, however, the most important questions about the consumer once again relate to housing and mortgage requirements. The persistence of housing activity in the face of serious savings weakness was one of the most significant new economic developments of 1979. Starts at a seasonally adjusted annual rate of 1.8 million units or more were recorded into the second half. The major reasons for this were the continuing development of secondary markets for mortgages and the continuing strong expectations for future large gains in residential real estate investment.

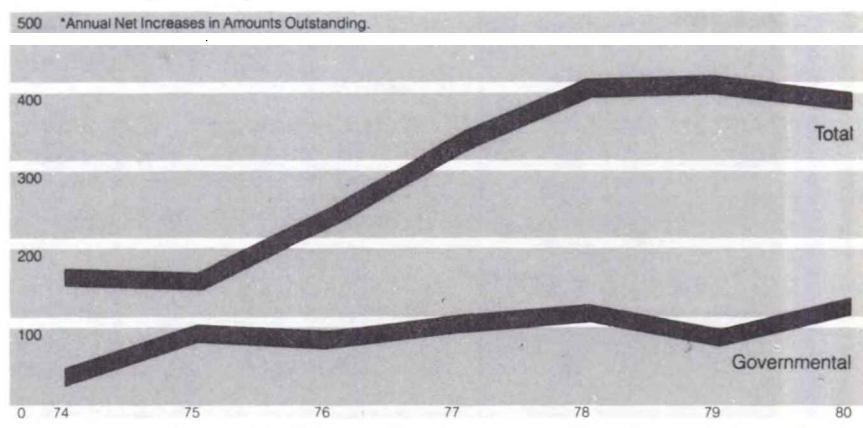
The development of the secondary market for residential mortgages will continue in 1980. We anticipate, for example, that the purchases of mortgages from originating institutions by Federal agency-guaranteed mortgage pools will rise another \$7 billion to a new record of \$37 billion, nearly four times the volume in 1975. Life insurance companies and pension funds will also increase their secondary market activity. These and other vehicles will allow the major originating institutions (savings and loan associations, mortgage companies, and commercial

Figure 39.6 Residential Mortgage Formation (\$ billions)**Figure 39.7 Development of Secondary Market for Home Mortgages (\$ billions)**

banks) to continue making a fairly large, although reduced, volume of new home mortgage loans in 1980 (see Figure 39.7). Heavy volume in the first three months or so of the year is virtually assured because of the large levels of commitments currently outstanding.

And demand for housing is apparently still surprisingly strong, given the extremely high level of mortgage rates now in effect. Nevertheless, the emergence of a significant positive spread between mortgage rates and the general rate of inflation, as well as uncertainty about the availability and cost of energy, will start to erode the (until recently) nearly universal belief that real estate will consistently outperform other major forms of investment.

Figure 39.8 Governmental Demands as a Proportion of Total Credit Demands (\$ billions)



This will be primarily felt in the market for seasoned housing. Substantially less funds will be available to support sales of older homes, thus discouraging the phenomenon of "trading up." New construction, on the other hand, should receive a higher proportion of a dwindling supply of credit. That is why starts are not likely to fall below the 1 million units per annum rate at any time next year, as they did for several months at a time in late 1974 and early 1975.

The slowdown in personal income gains relative to consumption expenditures, as well as reduced credit availability, in 1980 are likely to produce another drop in the rate of household financial asset accumulation. About midyear there should be a gradual shift in households' preferences for various financial assets. For much of the year they will prefer either direct investment in money market and other fixed-income instruments or money market investment funds. This means no relief for savings institutions anytime soon. Later in the year, of course, as rates of return on short-term direct investment fall significantly, there could be a redirection of funds back through traditional intermediaries, especially now that rates on savings media have become much more competitive.

Financing a Higher Treasury Deficit

Certainly one of the most dramatic elements marking off 1980 from this past year is the expected reversal of the downward cyclical trend in Federal Government financing. The sum of Treasury, Federal credit agency, and guaranteed mortgage pool net demands on the market next year is likely to exceed the \$82.6 billion of 1975 (the so-called "crowding out" year) by nearly \$14 billion. The difference in impact can be gauged to some degree by the fact that the sum of all other credit demands in that year was only about \$95 billion, but will be about \$295 billion this coming year. In other words, there will be a lot more to crowd out.

The crucial development is the sharp increase in the federal budget deficit from a shade under \$30 billion in calendar 1979 to somewhere near \$50 billion in calendar 1980. This includes a mere \$7 billion or so of tax cuts effective next year. It also assumes that the better part of the revenue falloff resulting from economic contraction would affect 1981. There is a projected deceleration in the growth of corporate tax revenues as a consequence of the impact of the tax reduction legislation of 1978 on 1979 liabilities. Expenditures, on the other hand, should accelerate from an estimated \$505 billion to almost \$570 billion in calendar 1980. This reflects significant increases in defense expenditures, transfer payments (due to cost-of-living adjustments, and the impact of economic slowdown on unemployment payments), and interest expense. In addition, we have projected a decline in gold sales and other means of financing.

About two-thirds of the estimated \$75.5 billion growth in Treasury debt next year will represent marketable issues. This represents a sharp contrast particularly with 1978, when special U.S. trust fund, special state and local government "arbitrage" series, foreign government series nonmarketables, and the savings bond program contributed as much as half or more to the financing of total Treasury debt expansion.

In the coming year, bill sales will rise sharply, producing close to \$20 billion (as compared with \$30 billion through coupon issuance). The Treasury seems set on further debt extension, undeterred by high current coupons. A significant volume of longer-term bonds, consequently, will be offered in competition with corporates.

The most salient feature of the pattern of expected market demand for these obligations (see Table 39.4) is that individual investors will have to be induced to pick up another \$30.5 billion net on top of last year's \$33.5 billion.

The overall volume of net new Federal agency financing in 1980 is expected to stay at 1979's peak levels (see Table 39.5). While the direct obligation financing of traditional budgeted and sponsored agencies will decline, the generation of new agency-guaranteed mortgage pool securities will continue to accelerate.

The recent heavy net issuance of the Federal Home Loan Banks to finance rising advances to member savings and loan associations will continue through the first part of 1980. Thereafter, improving savings flows will result in some repayments. FNMA will be constrained from participating in the secondary market as actively as in 1979. The farm credit system will continue to raise a substantial volume of net new funds. Despite occasional interruptions in the creation of new "collateral" due to temporary inelasticity in the administered ceilings on insured mortgages, we expect another sharp increase in the net issuance of guaranteed mortgage pool securities.

Increased Tax-Exempt Financing

The growth of transfer payments and gradual deceleration in the rise in tax revenues, which will help swell the federal budget deficit, will produce a similar

effect on state and local government budgets. Typically, and this coming year will prove no exception, the volume of tax anticipation financing at this level grows to meet additional needs. Moreover, as housing construction continues to fall, and unemployment rates rise sometime later in the year, public construction expenditures will rise. Nevertheless, we project only a moderate gain in state and local financing in calendar 1980 to levels significantly below the peak years of 1977-78. This reflects not only the absence of new federal arbitrage issuance, which swelled municipal bond calendars then, but even some retirements of seasoned arbitrage issues. The issuance of state and local housing authorities, moreover, will probably not rise appreciably over 1979 levels.

All things considered, we expect the gross volume of new tax-exempt bond issuance to rise from this year's estimated \$38 billion to nearly \$42 billion in 1980, well short of 1978's \$46.2 billion record. This will be partly offset by higher maturities. New note issuance will also rise, by about \$2 billion, to a shade under \$22 billion, producing a net increase in notes outstanding of nearly \$2 billion. The gross issuance of notes still does not compare with the peaks of the mid-1970s.

This coming year will see a marked deterioration in effective institutional demand for tax exemption. Whereas in this past year, commercial banks, property liability insurance companies, and municipal bond funds absorbed all of the net tax-exempt issuance, in 1980 individuals will have to absorb an increasing share of the new issuance.

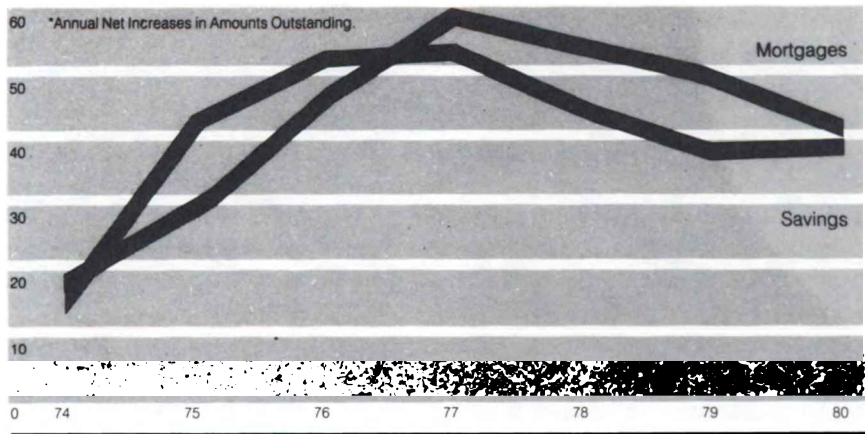
The commercial banks' security portfolios will come under severe monetary restraint in the coming year. Even now, large banks are in effect sitting on the sidelines. The property liability industry is being affected by a new round of regulated rate restrictions, reducing their need for new tax exemption sharply. On the other hand, the high level of rates in the tax-exempt market should at some point begin to increase the attractiveness of municipal bond funds as well as direct purchases of tax-exempts for individuals.

Lending and Investing: Midyear Shifts

Thrift Institutions: Getting Through a Tough Year. A recovery in savings inflows will probably start too late in the year to prevent squeezes on net new mortgage takedowns as well as profitability for most thrifts in 1980. For the first part of the year, in fact, interest rate and disintermediation pressures will increase. It is apparent that the slowdown in the growth of time and savings accounts in 1978-79 has been virtually a direct result of the growing popularity of money market funds.

This will have a profound effect on net mortgage takedowns for most of the coming year. This is apparent from the decline in outstanding commitment levels in recent months. We expect that combined net new mortgage takedowns for mutual savings banks, savings and loan associations, and credit unions will decline some \$9 billion from this year's nearly \$53 billion total.

Figure 39.9 Savings Inflows Compared to Mortgage Lending at Savings and Loan Associations (\$ billions)



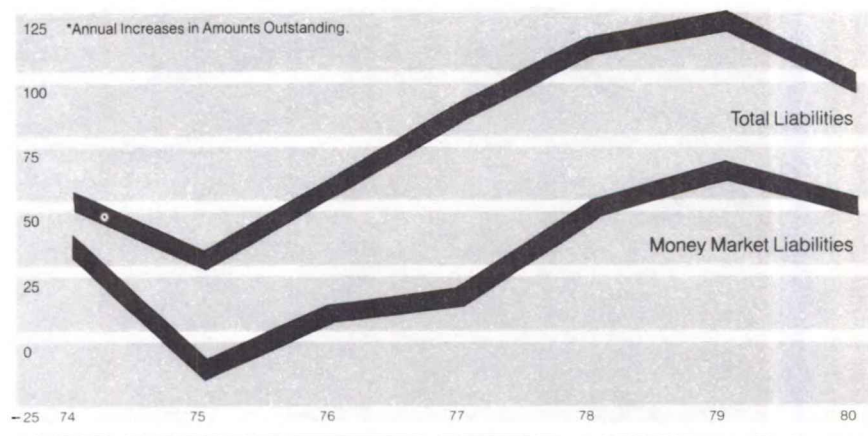
At some point in the year, mutual savings banks will shift from liquidating to purchasing U.S. governments and corporate bonds. Both savings banks and associations will be fairly heavy investors in open market paper early in the year and in guaranteed mortgage pool securities throughout the year (included in Federal agencies in Table 39.7).

Contractual Institutions: Increased Equities and the Timing of Maturity Extension. The crucial questions in 1980 for the predominantly long-term investing institutions collectively called contractals are timing and equity exposure. Most will experience continued growth in the volume of net new investible funds.

Property liability insurance companies are the sole exception to this. We expect recent regulatory changes and their unfavorable impact on profitability to slow the net inflow of funds to these institutions and effect significant changes in their investment preferences in 1980. Whereas as recently as 1978, more than half of their net inflow of funds was invested in tax-exempts and only about 15 percent in corporate bonds (see Table 39.7), we expect these companies to invest more in corporates than in tax-exempts next year and be net sellers of stocks on balance, as in 1979.

As for other contractals, the timing of shifts out of short-term investments into long bonds and of increased equity investments are paramount. We suspect that temporary fixed-income rallies will result in the conversion of most of the remaining institutional liquidity (which appeared to be much reduced in repeated anticipations of cyclical turning points in rates throughout late 1978 and 1979). This past year saw both private pension funds and state and local retirement funds move toward a more aggressive equity stance, in combination acquiring an estimated \$12 billion of net new stocks versus \$8 billion in 1978. We think this shift will continue in 1980. Life insurance companies, by contrast, were and will

Figure 39.10 Money Market Liabilities as a Proportion of Total Commercial Bank Liabilities (\$ billions)



remain very modest preferred stock market investors, partly due to tax considerations, partly to heavier policy loan demand. Life insurance companies also acquired a very large volume of net mortgages in 1979, and while this may fall off somewhat in 1980, they will probably make this up by increased purchases of mortgage-backed securities.

Investment and Finance Companies: Fading Off in Second Half. One of the most remarkable developments of 1979 was the huge growth of money market funds, which will have more than tripled their assets to an estimated \$47 billion by year end. We expect that this growth will start to soften sometime around the middle of the year, leaving money market funds with a still large net inflow of \$25.5 billion for 1980, versus \$32.4 billion this year.

For finance companies, the first half will be more or less like 1979, but the second half will see a sharp reduction, perhaps even some net repayments, of business and consumer loans.

Commercial Banks: Testing Ground for New Monetary Policies. If the Federal Reserve's new policy measures announced two months ago are to have any effect on credit growth and inflationary expectations in 1980, commercial banks must expect significant changes from this year. Specifically, the Fed must force banks to rely far less on demand deposit growth and to be net liquidators of securities. This past year, banks will have *added* to their holdings of all kinds of securities except bankers' acceptances, even including U.S. governments.

We suspect that it will prove harder for the Fed to persist without any letup than to have initiated a tough new policy. Whatever the temporal course of policy, however, we believe that the end result will be a slower rate of bank credit expansion, less reliance on demand deposit growth, and renewed pressure on portfolio holdings.

Total bank credit expansion will slow from this year's estimated \$124 billion to \$100 billion (see Table 39.8). This amounts to an annual growth rate of 9.2 percent for 1980 versus 12.9 percent in 1979. Business lending, especially term loans, will not increase as much as in 1979. Mortgage and consumer loan growth, moreover, will be almost as strong as this past year as banks continue their penetration of these markets.

Foreigners to Reverse Sales of U.S. Governments in 1980. The international situation both with respect to petroleum and U.S. prestige abroad, to say nothing of U.S. inflation rates and rising interest rates overseas, suggests that the dollar will come under pressure again in 1980. We expect, therefore, substantial but nowhere near record levels of foreign official purchases of U.S. governments in the coming year, in addition to increased purchases by private investors abroad of U.S. Treasury foreign currency obligations.

Implications for Interest Rates

The combination of economic contraction and accelerating inflation will not, at least at first, reduce upward pressures on interest rates. Under these circumstances, credit demands do not quickly abate; rather, the need to finance inventories, receivables, and even consumption rises. Moreover, monetary restraint would have to be maintained. The persistence of inflation in the early period of economic contraction will aggravate rather than ease the shortage of liquidity. Only later on, when business priorities have shifted from operations to the restoration of financial adequacy, will tensions lessen in the credit markets.

If so, new postwar record highs would be established for almost all interest rates somewhat before midyear. It is, however, quite possible that the credit markets would be in a technical rally at the start of the year—a phase that would temporarily reawaken as yet strong inflationary expectations. In that event, the Federal Reserve would have to react with even greater restraint. The subsequent peak in short-term rates would probably precede that in longs because unfavorable inflationary expectations are now deeply imbedded among long-term investors and would be slow to recede, especially since current rates of inflation would tend to resist even a typical cyclical inventory liquidation.

The extent of any decline in long-term interest rates will also be limited, at least for the time being, by the persistence of inflation, a sharp increase in corporate bond funding of short-term debt, heavy mortgage pool security issuance, the growing federal budget deficit, continuing federal debt maturity extension, and the rising issuance of municipal bonds.

December 6, 1979

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Technical Notes on the Following Tables

Table 39.1 summarizes all the chief factors of supply and demand for credit. The

detailed supporting data for these factors, as well as other supplementary statistics, are shown in Tables 39.2 through 39.8. In the summary (Table 39.1), net credit demands are divided arbitrarily into three types: (1) long-term private, which includes privately held mortgages, corporate bonds, and foreign bonds; (2) short-term private, which includes such business borrowings as loans from commercial banks and open market paper, and such consumer borrowings as installment, bank card, security, and personal loans; and (3) privately held federal and state and local government debt. The suppliers of these funds are broken down into: (1) nonbank finance, which includes thrift institutions, contractual institutions, foundations, endowments, investment companies, finance companies, and the like; (2) commercial banks; (3) corporations, state and local government general funds, and foreigners; and (4) the residual: households direct. We also include in Table 39.1 some summary comparisons of growth rates in debt, owed and held, and in Gross National Product, real and nominal.

In addition, a column at the right-hand side of each table shows estimates for amounts outstanding and holdings as of year end 1979 (shown in *italics*). These amounts outstanding are shown at book value, except for corporate stock, which is shown at market. Totals for various institutions holding stock are the sums of the market value of their stock holdings and the book value of all other assets.

The summary table excludes equities on both the supply side and the demand side. Tables 39.2 through 39.6 show various demand factors in detail with supporting data and the net purchases by each investor group of each specific form of credit. Tables 39.7 and 39.8, which analyze sources of funds, contain all of the ownership data from preceding tables rearranged according to investor groups, together with their other assets, so that the financial activities of each type of investor can be reviewed. The extreme right-hand column in each table provides table cross-references for the reader who wishes to see how the estimates in the various tables are connected.

While the historical numbers presented in these tables are our best estimates, readers should treat them as provisional. Most of them, even those from official sources, are at least partly estimated and are frequently revised. Sometimes the revisions are significant. The data from which they are constructed are often incomplete and disclose less than we would desire. The 1979 estimates are especially liable to revision inasmuch as they reflect incomplete returns.

Table 39.1

1. Summary of Supply and Demand for Credit (\$ billions)

	Annual Net Increases in Amounts Outstanding						Am't. Out. Table	
	1974	1975	1976	1977	1978	1979*	1980*	31 Dec 79* Refer.
Net Demand								
Privately Held Mortgages	42.2	42.0	70.4	109.0	116.5	118.5	100.7	1,102.9 2
Corporate & Foreign Bonds	29.1	39.1	39.1	37.4	33.5	32.8	42.7	475.6 3
Subtotal Long-Term Private	71.3	81.1	109.5	146.4	150.0	151.3	143.4	1,578.5
Short-Term Business Borrowing	50.4	-16.0	9.8	47.0	78.5	112.9	81.5	577.3 8
Short-Term Other Borrowing	16.3	14.4	40.7	49.6	66.0	62.3	43.9	486.6 8
Subtotal Short-Term Private	66.7	-1.6	50.5	96.6	144.5	175.2	125.4	1,063.9
Privately Held Federal Debt	28.4	82.6	71.8	73.3	83.8	66.9	96.5	760.0 7
Tax-Exempt Notes and Bonds	14.5	16.3	17.1	31.1	32.9	22.0	27.0	328.0 4
Subtotal Government Debt	42.9	98.9	88.9	104.4	116.7	88.9	123.5	1,088.0
Total Net Demand for Credit	180.9	178.4	248.9	347.4	411.2	416.4	392.3	3,730.4
Net Supply¹								
Thrift Institutions	25.8	53.7	70.0	81.8	80.2	66.7	58.8	738.1 9
Insurance, Pensions, Endowments	29.0	40.9	53.1	67.3	70.2	75.1	81.4	690.6 9
Investment Companies	1.7	3.7	4.6	6.7	8.3	23.2	20.7	57.4 9
Other Nonbank Finance	3.9	-4.3	8.7	17.6	15.9	25.6	19.5	185.6 9
Subtotal Nonbank Finance	60.4	94.0	136.4	173.4	174.6	190.6	180.4	1,671.7 9
Commercial Banks ²	52.6	29.9	59.6	83.5	107.0	124.3	100.0	1,091.9 10
Business Corporations	8.8	11.6	7.7	4.9	4.5	10.3	12.2	121.4 11
State & Local Government	1.1	2.4	4.9	11.3	14.7	5.2	3.0	72.5 11
Foreign ³	18.5	7.1	19.6	44.1	57.4	21.7	34.6	249.0 11
Subtotal	141.4	145.0	228.2	317.2	358.2	352.1	330.2	3,206.5
Residual (mostly household direct)	39.5	33.4	20.7	30.2	53.0	63.3	62.1	523.9 12
Total Net Supply of Credit	180.9	178.4	248.9	347.4	411.2	416.4	392.3	3,730.4
Percentage Growth in Outstandings								
Total Credit	9.3	8.4	10.8	13.6	14.2	12.5	10.5	
Government	7.8	16.8	12.9	13.4	13.2	8.9	11.4	
Household	7.0	6.3	11.6	14.9	14.9	12.8	9.1	
Corporate	14.2	3.6	7.4	11.9	14.1	16.1	11.8	
Long-Term	8.2	8.6	10.7	12.9	11.7	10.6	9.1	
Short-Term	12.5	-0.3	8.5	14.9	19.4	19.7	11.8	
Held by Nonbank Finance	7.2	10.4	13.7	15.3	13.4	12.9	10.8	
Commercial Banks	8.3	4.3	8.3	10.7	12.4	12.8	9.2	
Foreign	23.0	7.2	18.5	35.1	33.8	9.5	13.9	
Household Direct	13.9	10.3	5.8	8.0	13.0	13.7	11.9	
Economic Correlations								
Growth in Real GNP	-1.4	-1.3	5.9	5.3	4.4	2.7	-1.5	
Nominal GNP	8.1	8.2	11.3	11.6	12.0	11.8	9.5	

¹Excludes funds for equities, cash and miscellaneous demands not tabulated above.²Includes loans transferred to banks of cooperating holding and other bank-related companies.³Includes US branches of foreign banks.

Table 39.2

2. Real Estate Mortgages and Factors in the Housing Market (\$ billions)

	Annual Net Increases in Amounts Outstanding						Amt. Out. Table
	1974	1975	1976	1977	1978	1979*	1980* 31 Dec 79* Refer.
Outstanding							
1-4 Family Nonfarm Home Mortgages	33.1	40.8	65.8	100.0	105.3	114.3	876.2
Multi-Family Mortgages	7.0	0.7	3.9	7.3	10.2	10.6	132.6
Commercial Mortgages	15.1	12.9	11.9	18.1	23.3	26.0	238.6
Farm Mortgages	5.0	4.6	6.2	8.8	10.2	13.6	89.6
Total	60.2	59.0	87.8	134.2	149.0	164.5	1,337.0
Less							
Federal Agency Holdings	10.2	5.3	-0.1	3.3	11.8	15.5	97.3
Federal Guaranteed Mortgage Pools	5.8	10.3	15.7	20.5	18.3	28.0	116.6
State & Local Housing Agencies	2.0	1.4	1.8	1.4	2.4	2.5	20.2
Privately Held Mortgages	42.2	42.0	70.4	109.0	116.5	118.5	1,102.9
Private Ownership							
Mutual Savings Banks	2.2	2.3	4.1	6.6	7.0	3.3	98.5 9a
Savings & Loan Associations	17.6	29.6	45.0	58.2	52.3	49.0	481.9 9a
Credit Unions	0.1	0.5	0.5	0.4	0.4	0.5	3.8 9a
Life Insurance Companies	4.9	2.9	2.4	5.3	9.1	12.0	117.9 9b
Private Noninsured Pension Funds	0.0	0.0	0.0	0.1	0.1	0.5	3.3 9b
State & Local Retirement Funds	0.3	0.7	1.2	0.9	1.3	2.0	13.2 9b
Foundations & Endowments	0.1	0.0	0.0	0.0	0.1	0.0	1.1 9b
Real Estate Investment Trusts	0.1	-4.8	-3.8	-2.4	-1.0	-0.7	5.3 9c
Mortgage Corporations	-1.2	0.1	0.5	1.9	2.6	1.0	10.7 9c
Finance Companies	-1.9	-1.3	-0.4	1.5	-0.2	0.3	11.1 9c
Total Nonbank Finance	22.2	30.0	49.5	72.5	71.7	67.9	746.8 9
Commercial Banks	13.0	4.1	15.1	27.7	35.0	37.6	251.6 10
Residual: Households Direct	7.0	7.9	5.8	8.8	9.8	13.0	104.5 12
Total Private Ownership	42.2	42.0	70.4	109.0	116.5	118.5	1,102.9 Δ
Value of Construction Placed							
New Housing Units	40.6	34.4	47.3	65.7	75.8	78.0	80.2
Office & Other Commercial Bldgs.	15.9	12.8	12.8	14.8	18.6	23.5	22.0
Private Housing Starts (1000 units):							
1-4 Family	956	956	1,249	1,573	1,558	1,345	1,130
Multi-Family	382	204	289	414	462	400	340
Total	1,338	1,160	1,538	1,987	2,020	1,745	1,470
Completions	1,729	1,317	1,377	1,657	1,868	1,925	1,800
Under Construction	1,001	794	922	1,208	1,310	1,275	1,125
Sales of New One Family Homes (1000 units)							
New Offerings	447	515	688	869	828	750	625
Sales	519	549	646	819	817	750	700
Change in Inventory	-72	-34	42	50	11	0	-75
Mobile Home Shipments	329	213	246	277	276	265	225

Table 39.3

3. Domestic Corporate and Foreign Bonds Sold in United States (\$ billions)

	Annual Net Increases in Amounts Outstanding						Amt. Out. Table	
	1974	1975	1976	1977	1978	1979*	1980*	31 Dec 79* Ruler.
Domestic Corporate								
•Public Straight Issues:								
•Long	17.1	17.8	17.3	18.7	14.2	18.3	25.2	
•Medium	7.8	13.1	7.3	3.3	3.6	5.6	10.0	
•Private Straight Issues ¹	7.1	9.0	13.8	18.3	20.0	18.5	18.5	
•Convertible Issues	0.5	1.4	1.0	0.6	0.4	2.0	1.4	
•Less Maturities and Retirements	5.7	7.6	8.2	8.2	8.7	13.2	15.1	
•Exchanges (Net of Conversions)	0.1	-0.8	-0.5	-0.3	-0.5	-0.3	-0.5	
Net Issuance	26.9	32.9	30.7	32.4	29.0	30.9	36.5	431.0 3a
Foreign Sold in U.S.								
•Canadian Issues	1.9	3.3	5.7	2.8	3.7	2.2	2.0	
•Other Countries Issues	0.8	1.6	2.4	2.0	2.6	1.5	1.7	
•International Issues	0.6	2.0	2.4	2.1	0.6	0.7	1.0	
•Less Retirements ²	1.1	0.7	2.1	1.9	2.4	2.5	2.5	
Net Issuance	2.2	6.2	8.4	5.0	4.5	1.9	2.2	44.6
Combined Net Issuance	29.1	39.1	39.1	37.4	33.5	32.8	42.7	475.6 1
Ownership								
Mutual Savings Banks	0.8	3.5	2.8	1.1	0.1	-0.9	0.8	20.7 9a
Life Insurance Companies	4.0	9.1	16.9	18.6	17.0	15.3	16.0	173.6 9b
Property Liability Companies	2.0	2.2	3.9	3.6	3.2	3.3	7.0	26.1 9b
Private Noninsured Pension Funds	4.7	2.8	1.3	6.5	8.2	6.0	6.7	59.8 9b
State & Local Retirement Funds	7.0	4.1	3.3	4.0	5.4	5.8	7.6	87.2 9b
Foundations & Endowments	0.7	0.8	0.7	0.6	0.7	0.6	0.6	14.1 9b
Taxable Investment Funds	-0.4	1.0	2.2	1.1	-0.9	0.8	1.2	6.4 9c
Security Brokers & Dealers	-0.1	0.2	0.5	-0.1	-0.1	0.0	0.0	0.4 9c
Total Nonbank Institutions	18.7	23.7	31.6	35.4	33.6	30.9	39.9	399.3 9
Commercial Banks	1.0	1.8	-0.6	-0.3	-0.6	0.5	0.8	6.9 10
Foreign ²	1.4	1.6	0.8	1.0	0.6	0.8	1.0	8.5 11
Residual: Households Direct	8.0	12.0	7.3	1.3	-0.1	0.6	1.0	71.9 12
Total Ownership	29.1	39.1	39.1	37.4	33.5	32.8	42.7	475.6 Δ

¹Adjusted to delivery date (as opposed to offering date) basis.²Purchases of new issues by foreigners are included in retirements, and thus not in ownership line.

Table 39.4

5. U.S. Treasury Debt (\$ billions)

	Annual Net Increases in Amounts Outstanding						Amt. Out. Table	
	1974	1975	1976	1977	1978	1979*	1980*	31 Dec 79* Refer.
Outstanding								
Marketable:								
Bills	11.9	37.8	6.5	-2.9	0.6	6.3	19.6	168.0
Coupons	0.7	42.6	51.6	41.5	27.0	30.2	29.3	356.0
Nonmarketables, etc.:								
Gov't Acc't Series	11.1	0.3	10.3	10.0	17.8	23.4	18.0	183.2
State & Local Series	0.2	0.6	3.3	9.4	10.4	-0.2	-1.0	24.1
Foreign Gov't Series (\$)	-3.3	-1.2	0.8	0.2	6.4	-4.7	5.0	22.7
Foreign Public Series (Non \$)	0.0	0.0	-0.1	-0.3	1.0	3.1	4.0	5.3
Savings Bonds	3.0	4.1	4.4	4.8	3.9	-0.7	0.6	80.4
Guaranteed & Noninterest-Bearing ¹	1.4	-1.5	0.1	2.6	3.1	-4.3	0.0	3.1
Total Public & Guaranteed Treasury²	25.1	82.6	76.9	65.4	70.3	52.9	75.5	842.7
Less Holdings of:								
U.S. Trust Funds	11.6	-1.9	7.8	7.8	15.2	21.0	16.5	191.0
Federal Agencies	0.3	1.5	1.5	-3.4	0.5	0.5	-1.0	1.2
Federal Reserve Banks	2.0	7.4	9.0	5.5	7.1	6.4	5.0	116.0
Privately Held	11.2	75.6	58.6	55.5	47.5	25.0	55.0	534.5
Ownership								
Mutual Savings Banks	-0.4	2.2	1.1	0.1	-0.9	-1.4	-1.0	3.6 9a
Savings & Loan Associations	0.0	1.3	3.7	-1.3	1.5	-0.5	-1.5	9.0 9a
Credit Unions	0.1	0.3	0.2	0.1	0.0	0.0	0.5	-1.4 9a
Life Insurance Companies	-0.1	1.4	0.6	-0.1	-0.5	0.2	0.3	5.0 9b
Property Liability Companies	0.4	2.5	3.1	3.3	0.9	1.3	3.0	16.5 9b
Private Noninsured Pension Funds	-0.1	4.9	3.4	3.9	-1.0	2.7	2.5	17.2 9b
State & Local Retirement Funds	0.0	1.3	2.3	2.7	1.0	1.7	1.5	11.2 9b
Foundations & Endowments	-0.4	0.0	0.2	-0.1	-0.1	0.1	0.0	0.6 9b
Money Market Funds	0.1	0.8	0.1	-0.3	0.4	1.6	2.5	2.7 9c
Taxable Investment Funds	0.4	0.0	0.0	0.2	-0.2	0.3	0.7	1.9 9c
Security Brokers & Dealers	0.2	-0.1	2.4	-0.7	-3.0	0.3	0.5	2.4 9c
Total Nonbank Finance	0.2	14.6	17.1	7.8	-1.9	6.3	9.0	71.5
Commercial Banks	-4.1	29.8	17.9	-2.4	-7.1	0.2	-5.0	91.9 10
Business Corporations	0.9	9.5	2.3	-5.8	-7.1	-0.5	4.5	1.0 11
State & Local Governments	0.0	3.3	5.4	8.7	10.0	1.5	0.0	56.4 11
Foreigners	4.0	7.9	12.1	31.2	28.7	-16.0	16.0	123.7 11
Residual: Households Direct	10.2	10.5	3.8	16.0	24.9	33.5	30.5	190.0 12
Total Ownership	11.2	75.6	58.6	55.5	47.5	25.0	55.0	534.5

¹Includes \$1.5 billion of Federal Financing Bank debt issued in 1974.²Components may not add to totals due to rounding.

Table 39.5

6. Federal Agency Debt (\$ billions)

	1974	Annual Net Increases in Amounts Outstanding						Am't. Out. Table	
	1975	1976	1977	1978	1979*	1980*	31 Dec 79*	Refer.	
Outstanding									
Budgeted & Federally Sponsored Agencies:									
Federal Home Loan Banks	6.5	-3.0	-2.1	1.4	13.3	6.7	1.5	38.5	
FNMA & Other Housing Credit	5.2	2.3	0.6	1.3	9.9	12.0	8.0	53.8	
Farm Credit Total	5.2	3.3	4.2	2.1	3.3	8.7	9.0	53.2	
Other Agencies	0.2	-0.5	-0.6	-0.8	-1.5	-1.0	-0.5	9.0	
Total	17.1	2.1	2.1	4.0	25.0	26.4	18.0	154.5	
Mortgage Pool Securities Guaranteed by:									
GNMA	3.9	6.5	12.3	14.3	9.5	17.0	22.0	71.3	
FHLMC	0.0	1.6	1.1	3.9	5.3	4.0	5.5	15.9	
Farmers' Home Administration	1.9	2.2	2.3	2.3	3.5	7.0	9.0	29.4	
Total	5.8	10.3	15.7	20.5	18.3	28.0	36.5	116.6	
Combined Total	22.9	12.4	17.8	24.5	43.3	54.4	54.5	271.1	
Less Holdings of:									
Trust Funds & Federal Reserve	3.2	0.9	0.9	1.4	-0.7	0.5	-0.5	9.8	
Federal Financing Bank ¹	2.5	4.5	3.7	5.3	7.7	12.0	13.5	35.8	
Privately Held	17.2	7.0	13.2	17.8	36.3	41.9	41.5	225.5 v	
Ownership									
Mutual Savings Banks	0.3	1.7	2.9	2.6	1.7	2.0	2.4	15.4 9a	
Savings & Loan Associations	1.2	4.1	0.7	4.9	6.7	5.0	7.0	19.8 9a	
Credit Unions	0.3	0.8	0.5	0.4	0.0	0.1	0.5	3.9 9a	
Life Insurance Companies	0.2	0.4	0.9	1.7	2.4	2.1	3.6	8.5 9b	
Property Liability Companies	0.2	0.3	0.5	0.5	0.4	2.3	2.5	5.7 9b	
Private Noninsured Pension Funds	1.2	0.3	1.6	2.5	4.1	3.0	4.5	19.8 9b	
State & Local Retirement Funds	0.5	1.2	2.6	2.5	3.5	4.5	5.6	16.5 9b	
Foundations & Endowments	0.3	0.3	0.1	0.4	0.3	-0.3	0.1	1.7 9b	
Money Market Funds	0.2	0.1	0.1	0.1	1.1	2.5	3.0	4.1 9c	
Securities Brokers & Dealers	0.4	-0.9	-0.2	0.0	-0.5	1.5	2.0	1.9 9c	
Total Nonbank Institutions	4.8	8.3	9.7	15.6	19.7	22.7	31.2	97.3 9	
Commercial Banks	3.7	0.8	2.1	0.6	5.7	2.0	0.5	45.8 10	
Business Corporations	1.4	-0.8	0.0	-0.4	0.7	-0.3	2.0	3.2 11	
State & Local Governments	1.1	-0.6	-0.4	0.6	2.2	0.7	1.0	8.2 11	
Foreign	-0.5	-1.0	0.0	2.7	1.1	0.7	0.1	7.1 11	
Residual: Households Direct	6.7	0.3	1.8	-1.3	6.9	16.1	6.7	63.9 12	
Total Ownership	17.2	7.0	13.2	17.8	36.3	41.9	41.5	225.5 Δ	
Summary of Privately Held Federal Debt									
U.S. Treasury	11.2	75.6	58.6	55.5	47.5	25.0	55.0	534.5 5	
Federal Agency	17.2	7.0	13.2	17.8	36.3	41.9	41.5	225.5 Δ	
Total	28.4	82.6	71.8	73.3	83.8	66.9	96.5	760.0 1	

¹Of mortgage pool securities.

Table 39.6

8. Loans¹ (\$ billions)

	Annual Net Increases in Amounts Outstanding							Amt. Out. Table	
	1974	1975	1976	1977	1978	1979*	1980*	31 Dec 79* Rater.	
Loans by Type									
Business	33.6	-14.6	1.6	32.0	51.9	68.9	53.3	418.0	▼
Consumer, Installment	9.5	7.8	21.6	36.9	44.8	40.3	30.4	315.9	▼
Consumer, Noninstallment	0.4	1.9	3.9	3.8	5.7	5.5	3.5	69.8	▼
Other	6.4	4.7	15.2	8.9	15.5	16.5	10.0	100.9	▼
Total Loans	49.9	-0.2	42.3	81.6	117.9	131.2	97.2	904.6	▼
Ownership									
Mutual Savings Banks: Consumer	0.2	0.2	0.4	0.4	0.7	0.4	0.2	4.4	9a
Savings & Loan Assoc.: Consumer	0.9	1.2	1.2	1.3	1.2	1.5	0.8	13.3	9a
Credit Unions: Consumer	2.3	3.8	5.5	6.4	8.3	4.5	3.0	50.4	9a
Finance Companies:									
Business	4.8	2.1	5.4	10.3	8.3	10.5	8.0	73.8	9c
Consumer	2.0	0.5	4.0	6.9	10.2	12.8	8.0	79.1	9c
Commercial Banks:									
Business	30.8	-17.2	-2.9	20.5	37.6	46.3	42.8	311.7	10
Consumer, Installment	3.6	2.9	10.8	18.6	23.8	20.5	18.0	156.7	10
Consumer, Noninstallment	-0.8	0.2	1.2	3.6	3.1	3.3	2.9	23.8	10
Other	-1.9	4.0	10.8	5.4	3.4	5.4	3.0	63.6	10
Business Corporations: Consumer	1.7	0.9	2.4	3.5	3.2	2.8	1.0	58.0	11
Foreign:									
Business	-2.0	0.5	-0.9	1.2	6.0	12.1	2.5	32.5	11
Other	8.3	0.7	4.4	3.5	12.1	11.1	7.0	37.3	
All Lenders: Total Loans	49.9	-0.2	42.3	81.6	117.9	131.2	97.2	904.6	▲
Summary of Short-Term Borrowing									
Business Loans	33.6	-14.6	1.6	32.0	51.9	68.9	53.3	418.0	▲
Open Market Paper	16.8	-1.4	8.2	15.0	26.6	44.0	28.2	159.3	7
Total Business Borrowing	50.4	-16.0	9.8	47.0	78.5	112.9	81.5	577.3	1
Consumer, Installment	9.5	7.8	21.6	36.9	44.8	40.3	30.4	315.9	▲
Consumer, Noninstallment	0.4	1.9	3.9	3.8	5.7	5.5	3.5	69.8	▲
Other	6.4	4.7	15.2	8.9	15.5	16.5	10.0	100.9	▲
Total Other Borrowing	16.3	14.4	40.7	49.6	66.0	62.3	43.9	486.6	1

¹Excludes loans included elsewhere, such as mortgages and open market paper.

Table 39.7

9. Summary for Nonbank Finance (\$ billions)

	Annual Net Increases in Amounts Outstanding						Amt. Out. Table	
	1974	1975	1976	1977	1978	1979*	1980*	31 Dec 79* Refer.
Thrift Institutions								
Mutual Savings Banks	3.2	10.6	12.7	11.3	9.3	4.7	6.5	148.7 9a
Savings & Loan Associations	19.8	37.7	50.6	63.2	62.2	56.9	47.8	529.9 9a
Credit Unions	2.8	5.4	6.7	7.3	8.7	5.1	4.5	59.5 9a
Total Credit	25.8	53.7	70.0	81.8	80.2	66.7	58.8	738.1 1
Insurance, Pensions & Endowments								
Life Insurance Companies	10.3	15.3	22.3	25.8	29.9	29.9	31.1	318.0 9b
Property Liability Companies	4.8	7.6	12.9	17.9	16.2	16.9	18.0	118.9 9b
Private Noninsured Pension Funds	5.8	7.9	6.3	13.2	11.7	13.1	15.0	102.1 9b
State & Local Retirement Funds	7.2	9.0	10.7	9.6	11.4	14.5	16.5	133.0 9b
Foundations & Endowments	0.9	1.1	0.9	0.8	1.0	0.7	0.8	18.6 9b
Total Credit	29.0	40.9	53.1	67.3	70.2	75.1	81.4	680.6 1
Investment Companies								
Money Market Funds	1.0	0.7	0.4	-0.2	5.2	17.9	14.0	25.1 9c
Municipal Bond Funds	1.1	2.2	3.1	4.4	2.9	3.3	4.2	19.7 9c
Taxable Investment Funds	-0.4	0.8	1.1	2.5	0.2	2.0	2.5	12.6 9c
Total Credit	1.7	3.7	4.6	6.7	8.3	23.2	20.7	57.4 1
Other Nonbank Finance								
Real Estate Investment Trusts	0.1	-4.8	-3.8	-2.4	-1.0	-0.7	-0.2	5.3 9c
Mortgage Corporations	-1.2	0.1	0.5	1.9	2.6	1.0	0.8	10.7 9c
Finance Companies	4.9	1.3	9.0	18.7	18.3	23.6	15.5	164.0 9c
Security Brokers & Dealers	0.1	-0.9	3.0	-0.6	-4.0	1.7	3.4	5.6 9c
Total Credit	3.9	-4.3	8.7	17.6	15.9	25.6	19.5	185.6 1
Total Nonbank Finance								
U.S. Governments	0.2	14.6	17.1	7.8	-1.9	6.3	9.0	71.5 5
Federal Agencies	4.8	8.3	9.7	15.6	19.7	22.7	31.2	97.3 6
Open Market Paper	1.5	0.9	-0.3	1.1	7.9	20.7	13.7	41.9 7
Corporate & Foreign Bonds	18.7	23.7	31.6	35.4	33.6	30.9	39.9	368.3 3
Mortgages	22.2	30.0	49.5	72.5	71.7	67.9	56.4	746.8 2
State & Local Securities	2.8	8.7	12.3	15.7	14.9	12.4	10.2	104.9 4
Business Loans	4.8	2.1	5.4	10.3	8.3	10.5	8.0	73.8 8
Consumer Loans	5.4	5.7	11.1	15.0	20.4	19.2	12.0	147.2 8
Total Credit	60.4	94.0	136.4	173.4	174.6	190.6	180.4	1,671.7 1
Stocks	4.8	11.2	15.1	15.2	9.4	8.1	10.0	308.3 ¹ 3c
Other Assets	12.7	13.0	12.2	15.0	18.4	16.2	19.1	209.2
Total Assets	77.9	118.2	163.7	203.6	202.4	214.9	209.5	2,187.2

*At market.

Table 39.8

10. Commercial Banks (\$ billions)

	Annual Net Increases in Amounts Outstanding						Amt. Out. Table	
	1974	1975	1976	1977	1978	1979*	1980*	31 Dec 79* Refer.
Loans to (or for):								
Domestic Corp. Bus., Term	11.5	-2.3	-3.0	2.1	10.7	17.4	11.0	95.7 ▼,3b
Domestic Corp. Bus., Short-Term	14.3	-9.0	6.7	18.3	14.7	19.6	18.0	144.9 ▼,3b
Domestic Noncorporate	-0.7	-2.0	-2.9	0.0	0.0	1.0	2.5	9.0 ▼
Foreign	1.0	-0.2	0.1	0.4	9.4	3.0	6.0	28.0 ▼
Finance Companies	0.7	-2.8	-2.1	0.7	3.9	4.3	2.6	25.1 ▼,9c
Other Nonbank Finance	4.0	-0.9	-1.7	-1.0	-1.1	1.0	2.7	9.0 ▼
Total Business	30.8	-17.2	-2.9	20.5	37.6	46.3	42.8	311.7 8
Agriculture	0.9	1.9	4.5	3.2	2.5	2.0	2.0	32.4 ▼
Security	-2.1	2.2	6.2	1.8	-3.0	4.7	1.0	24.3 ▼
Miscellaneous	-0.7	-0.1	0.1	0.4	3.9	-1.3	0.0	6.9 ▼
Total Other	-1.9	4.0	10.8	5.4	3.4	5.4	3.0	63.6 8
Mortgage	13.0	4.1	15.1	27.7	35.0	37.6	34.5	251.6 2
Consumer Installment	3.6	2.9	10.8	18.6	23.8	20.5	18.0	156.7 8
Consumer Noninstallment	-0.8	0.2	1.2	3.6	3.1	3.3	2.9	23.8 8
Total Loans	44.7	-6.0	35.0	75.8	102.9	113.1	101.2	807.4
U.S. Governments	-4.1	29.8	17.9	-2.4	-7.1	0.2	-5.0	91.9 5
Open Market Paper	1.6	1.1	3.2	0.2	-2.3	-1.0	-2.0	8.4 7
Federal Agencies	3.7	0.8	2.1	0.6	5.7	2.0	0.5	45.8 6
Corporate & Foreign Bonds	1.0	1.8	-0.6	-0.3	-0.6	0.5	0.8	6.9 3
State & Local Securities	5.7	2.4	2.0	9.6	8.4	9.5	4.5	131.5 4
Total Credit	52.6	29.9	59.6	83.5	107.0	124.3	100.0	1,091.9 1
Reserves	-0.3	0.8	-1.0	3.5	5.9	-1.5	-1.0	45.2
Total Financial Assets	52.3	30.7	58.6	87.0	112.9	122.8	99.0	1,137.1 ▼
Demand Deposits (Private Nonbank)	3.6	6.1	10.3	18.7	12.7	20.0	14.0	292.9
Demand Deposits (U.S.)	-5.1	-1.7	-0.1	4.3	6.8	-5.1	-4.0	9.0
Negotiable CDs	28.5	-10.1	-17.5	12.0	22.6	0.0	15.0	100.0
Other Time Deposits	27.2	37.1	57.4	40.5	36.0	33.0	30.0	531.7
Commercial Paper	3.5	0.3	-0.8	1.2	6.7	8.0	7.0	23.8 7
Net Adv from (to) Foreign Branches	-0.4	-3.0	-3.1	-6.4	1.4	30.0	10.0	19.8
Repurchase Agreements & Fed Funds	1.6	1.5	13.9	10.6	18.8	25.0	19.0	98.1
Net New Bond Issues	2.4	1.2	1.5	3.5	1.2	3.0	2.8	19.6 3a
Other Liabilities (net of misc. assets)	-8.2	-5.0	-10.1	-2.4	-1.1	1.4	-1.8	(44.6)
Equity Accounts	-0.8	4.3	7.1	5.0	7.8	7.5	7.0	86.8
Total Liabilities (Net)	52.3	30.7	58.6	87.0	112.9	122.8	99.0	1,137.1 ▲

* Includes loans transferred to books of nonoperating holding and other bank-related companies. Excludes holdings of open market paper.

BANK OF JAPAN

Financial Diagnosis: Japan

(1992)

1. Financial Surpluses and Deficits

A substantial narrowing in the corporate business sector's financial deficit¹ (reversing the rapid expansion in the four years from 1987) stands out as perhaps the most prominent feature of money flow during 1991 (see Table 40.1 and Figure 40.1). As a result, the overall financial surplus in the domestic nonfinancial sector expanded almost 50 percent, despite the moderate decline in the surplus in the personal sector. On the other hand, the financial deficit in the overseas sector (i.e., Japan's current account surplus measured in yen terms), which is the mirror image of the domestic nonfinancial sector, grew for the first time in five years.^{2,3}

The above trends in Japan's domestic sector are fundamentally a reflection of the downturn in corporate investment in plant and equipment and inventories, itself a reflection of the adjustment phase the economy entered following the prolonged expansionary period that began in the October–December quarter of 1986 and that peaked in 1991. Indeed, similar fund-flow trends have been observed during previous economic downturns.

Nonetheless, the corporate business sector's financial deficit in 1991 was equivalent to 6.8 percent of nominal GNP, far larger than recorded in earlier adjustment phases, which plainly attests to the high level of such investment.

2. Fund Raising and Investment

In 1990, the amount of funds raised as well as invested in the domestic nonfinancial sector turned downward from the previous year, reversing an extended up-trend that lasted for several years. This turnaround was sustained in 1991, which

Excerpted, with permission, from Bank of Japan, *Flow of Funds in Japan, 1991*, Research and Statistics Department, Special Paper No. 220 (Tokyo: Bank of Japan, June 1992), 6–21.

saw unprecedented declines. The narrowing trend in fund flows to/from the overseas sector also continued. These developments together contributed to a conspicuous shrinking in the volume of funds raised and invested, both domestically and overseas.

First, on an incremental change basis (Table 40.2), in 1991 the amount of funds raised by the domestic nonfinancial sector plunged 42.3 percent from the year before (as compared with a 7.9 percent dip in 1990). Funds invested were off 39.0 percent (down 11.6 percent in 1990). Clearly, both declines are far larger even than those of 1990, which until now had been the largest on record since statistics were first started in 1954.

Examination of the changes by sector reveals that funding (i.e., fund raising) was down 42.6 percent in the corporate business sector, which also experienced a ¥1.4 trillion net decline in investments. Funding and investments fell a respective 47.0 percent and 23.9 percent in the personal sector and, in the public sector, were off 31.4 percent and 18.5 percent. Indeed, in every sector, funding and investment figures dropped significantly, and the corporate business sector displayed its first net decline in the investment of funds.

By type of transaction, funding based on borrowings further fell, chiefly in the corporate and personal sectors. It was off 5.7 percent from the previous year in 1990 but slipped steeply, by 34.7 percent, in 1991. Net declines were posted in amounts funded through commercial paper (CP) and external borrowings. Though increases were seen in terms of external bonds, particularly Euroyen-denominated straight bonds, the continued sharp downturn in stocks, coupled with a net drop in the level of funding from short-term government securities, effectively sustained the overall securities decline, which in 1991 widened to 27.0 percent, from 22.8 percent the year before.

On the investment front, a net ¥2.8 trillion drop was seen in the amount of funds in stocks and other negotiable securities because of declining stock prices. The scale of the net decline in investment trust funds also widened in 1991, to ¥4.5 trillion from ¥2.5 trillion the year before. Funds deployed in cash and deposits, foreign credit, insurance, and trusts receded across the board.

Figures on fund flows between the domestic (including the financial sector) and overseas sectors underscore a shift to deep net declines in the short-term external assets and liabilities of authorized foreign exchange banks. The corporate business sector posted a net decline in external liabilities, as well as a substantial reduction in levels of overseas direct investment compared with the year before. In effect, 1991 continued the previous year's downtrend in the flow of funds to/from the overseas sector (see Table 40.3).

The above funding and investment trends appear to be a manifestation of financial surpluses/deficits among economic entities, which reflected changes in the real economy, coupled with synergistic influences from a variety of factors in the financial environment. Namely, (1) the corporate business sector had historically high liquidity, and wide leeway to draw on it; (2) in 1990 and into 1991,

the traditional spread between the rate of return on financial assets and the cost of fund-raising was restored; from about 1985, an inverse relationship had developed, effectively pushing the rate of return on financial assets above the cost of fund-raising; (3) the slowdown gathered momentum, and spiraling land values and prices of golf club memberships and other assets (besides equities) reversed, thus stifling speculative investment activity; and (4) financial institutions continued placing priority on profitability and strengthening risk management. Under these circumstances arbitrage transactions (fund-raising by economic entities to invest in financial asset activities) continued to unwind.

3. Fund Intermediation in the Broadly Defined Financial Market

Plunge in Intermediation Through the Domestic Securities Market

The broadly defined financial market serves (see Figure 40.2) as the intermediary for the funding and investment operations of the economic sectors discussed in the preceding section. In 1991 the aggregate amount of funds intermediated (supplied) was 42.5 percent less than in the previous year. Within the context of this drastically smaller market, we will focus on intermediation channels and type of funds supplied by the financial, domestic nonfinancial, and overseas sectors to meet demand for funds in the domestic nonfinancial, and overseas sectors.⁴

Of the funds supplied through the broadly defined financial market (see Figure 40.2 and Table 40.4), the share of funds supplied to the overseas sector slipped significantly in 1990, while that to the domestic nonfinancial sector correspondingly widened, and the resultant balance was largely maintained through 1991. (The share of funds supplied to the overseas sector was 26.6 percent in 1989, 14.4 percent in 1990, and 14.9 percent in 1991; corresponding figures for the domestic nonfinancial sector were 73.4 percent, 85.6 percent, and 85.1 percent.)

Data on intermediation channels (markets) in 1991 underscore a net decline of ¥4.8 trillion in the supply of funds to the domestic nonfinancial sector by the securities market (i.e., investments by this sector in domestic securities, Channel E). Although issues of straight bonds headed upward, equity-linked issues remained slack. This, coupled with expanded sales of stock holdings by the domestic nonfinancial sector to the overseas sector, resulted in the market's net decline.

By contrast, the share of total funds supplied by the foreign capital market (investments in Japan by the overseas sector, Channel F) to the domestic nonfinancial sector demonstrated a substantial increase, to 21.7 percent from 9.1 percent in 1990. Greater foreign bond issuance (e.g., Euroyen bonds) by the corporate business sector, coupled with growth in the acquisition of Japanese stock by the overseas sector, proved influential factors behind this expansion.

The total supply of funds through financial institutions to the domestic nonfinancial sector (Channel D) fell almost 40 percent from the prior-year level, attributable to a net decline in CP holdings; a downturn in negotiable securities

investment; and a contraction in loans, the core source of supply. Nonetheless, financial institutions still accounted for a larger share of all funds supplied to the domestic nonfinancial sector in 1991.

The share of loans supplied by private financial institutions continued to narrow, dropping from 82.6 percent to 70.7 percent of the total. By contrast, public financial institutions (e.g., government financial institutions, the Ministry of Finance's Trust Fund Bureau, and postal savings) accounted for a significantly larger, 29.3 percent, share of loaned funds, up from 17.4 percent in 1990. In effect, the downturn in government loans was minimal and the volume of loans from the Trust Fund Bureau grew.

Among private financial institutions, "all banks" (member banks of the Federation of Bankers' Associations of Japan) and specialized financial institutions for small businesses provided a sharply diminished supply of funds. Funds from foreign banks in Japan shifted to a net ¥500 billion decline. Largely owing to the stock market slump and resultant ebb in margin trading, funding from securities companies also registered net declines for the second consecutive year: The ¥2.8 trillion net drop in 1990 was followed by another ¥2.4 trillion slide in 1991.

As for the supply of funds to the overseas sector (Channels G and H), investments in foreign securities by financial institutions climbed in 1991 (they increased significantly for investment trusts and trust banks but fell sharply for authorized foreign exchange banks). By contrast, foreign direct investment and investment in foreign securities by Japanese companies trended lower by a wide margin.

By transaction, the proportion of funds supplied through securities (i.e., the aggregate of investments in domestic CP and other domestic securities by financial institutions, domestic securities investments by the nonfinancial sector and overseas sector, and foreign securities investments) widened from 25.0 percent in 1990 to 31.6 percent, reflecting the growth of funding levels in domestic securities investments from abroad (foreign capital market).

4. Recent Changes in Fund-raising and Investment Activities

Sections 1 and 2 discussed financial surplus/deficit trends in each economic sector, as well as effects on funding and investment. One characteristic of recent fund-flow movements is that, in addition to forces in the real economy, they are also influenced by fluctuations in land values and stock prices as well as the value of other assets. This section takes this factor into consideration in striving to present a somewhat longer-term outlook of fund flows.

Changes in the Fund-raising and Investment Activities of Economic Entities, and Underlying Factors

The financial surpluses and deficits in each economic sector have been observed to move in line with economic developments. In effect, trends in these sur-

pluses/deficits are shaped by differentials between savings and investment in the real economy.

To identify the relationships between surplus/deficit trends and the course of funding and investment, it is instructive to examine the corporate business sector, which is the most sensitive to developments in the economy at large. From the rapid expansionary period of the late 1960s and early 1970s up to the mid-1980s, the level of fund-raising by this sector held relatively steady at some two- to threefold the level of its financial deficit (see Figure 40.3).⁵ This appears to be a result of the fund-raising patterns adopted by many corporations that sought not only to cover their financial shortfalls from year to year but also to build levels of liquidity appropriate to the economy's scale of growth. The data also show that the balance of financial assets in the corporate business sector held firm at about 50 percent of nominal GNP up to about 1980 (see Figure 40.9). In the personal sector, the level of investment remained relatively steady at about 1.5 times the size of the sector's financial surplus.⁶

Funding and investment levels appear to have been behind major shifts in the flow of funds among economic sectors, once in the second half of the 1980s, and again in about mid-1990. Viewing these shifts as key turning points, it is worthwhile to examine and compare funding and investment trends in the highly volatile corporate business sector and private sector over three periods: 1980–84, 1985–89 (the “asset price-steep rise” phase), and 1991. (Trends for 1990 are not factored into Figures 40.4 and 40.5 since they fall between the second and third periods under consideration here.)

During the “asset price-steep rise” phase, the average financial deficit in the corporate business sector (see Figure 40.4) moved at levels seen in the first half of the 1980s. In the meantime, fund-raising to invest in financial asset activities heated up, as evidenced by the growth of borrowing; issuance of CP, convertible bonds, and bonds with warrants attached; and by the growth of investments in time deposits, stocks, and trusts; and overseas credit. As a result, the scale of both funding and investment demonstrated explosive growth.

Though the sector's financial deficit remained high in 1991, fund-raising to invest in financial asset activities in general headed down, as seen in the net decline of CP issues and overseas borrowing for investment purposes. In effect, total funding settled back to a level corresponding with the sector's financial deficit, while the level of investment displayed its first net decline since relevant records have been kept. As these developments attest, 1991 contrasted sharply with trends through the preceding “asset price-steep rise” phase.

In the personal sector (see Figure 40.5), funding activities during the “asset price-steep rise” phase were characterized by a sharp upsurge in consumer credit and borrowings, which spurred a tempo of investment that far outstripped growth of the sector's financial surplus. In 1991, however, the scale of such credit and borrowings began to subside, while the upbeat pace of investment fell back to show only marginal growth as stocks and other negotiable securities exhibited net declines.

At least three factors played a crucial underlying role in the expansion of investment and funding during the "asset price-steep rise" phase, which was followed by a contraction in investment and funding from 1990 onward.

First of all, the growth of fund-raising to invest in trading was largely a product of the rise in investment return rates above the cost of fund-raising, and the resultant improvement in the rate of return on financial assets. It is instructive to examine the relationship between the rate of return on financial assets⁷ and the long-term prime lending rate, which is one yardstick to assess the cost of fund-raising (see Figure 40.3). In general, the former trended below the latter until about 1985. Thereafter, progress in monetary relaxation pushed the interest rate on procured funds sharply lower. By contrast, the margin of decline in the rate of return on financial assets was relatively insignificant, owing in part to the rise in prices of stocks and other assets.

So the traditional spread between the rate of return on financial assets and interest rates⁸ on fund-raising had reversed, and this in turn provided a strong fund-raising incentive to the corporate business sector. Debt-based speculative investments thus grew briskly. (In 1986 the volume of procured funds amounted to 7.7 times the size of the sector's financial deficit.)

In 1989, however, the interest rate on procured funds moved back up, closely tracking the rate of investment return. As a result, the volume of procured funds dipped to a level less than three times the scale of the financial deficit. In 1990 the former relationship returned, with the cost of fund-raising once again moving higher than investment return. From that point on, most companies opted to draw down their high levels of liquidity rather than borrow new money or effect new equity financing, thus fostering a close one-to-one correspondence in the level of procured funds and the financial deficit.

The second factor was the changed stance of financial institutions with respect to lending and interest rates. At one point during the "asset price-steep rise" phase, interest rates on large-denomination time deposits trended higher than the rate on CP issues and the short-term prime lending rate (see Figure 40.6). While it continued, this state of affairs encouraged an expanded level of funding activity by the corporate sector. Since 1990, however, financial institutions have given greater consideration to both profitability and the need to minimize risk. This has had the effect of trimming procurement for the purpose of investing in activities based on interest-rate arbitrage.

Lending attitudes have also turned prudent. Bank loans to three sectors (real estate, construction, and financial institutions) climbed steeply in 1986 and 1987. Since 1990, however, the growth of such loans has been slower and, in volume terms, was almost flat in 1991, largely because of restrictions on the growth of the outstanding balance of loans to the real estate sector. This development has strongly promoted a downtrend in overall loans (see Figure 40.7).

The third key influence is seen as having come from borrowing trends in the personal sector. Essentially what happened is that the volatile levels of consumer

credit and other borrowings in this sector moved in response to asset price trends rather than private consumption trends. In particular, the scale of consumer credit expanded at an average pace of 50 percent or more, year after year, during the "asset price-steep rise" phase, chiefly in the form of large loans whose deployment is at the discretion of the borrower. This trend abruptly lost momentum thereafter. It appears also to have been driven by fluctuations in the prices of stock, real estate, golf club memberships, and other assets (see Figure 40.8). Other borrowings also appear to have been greatly influenced by those of securities companies to finance their margin trading activities during the "asset price-steep rise" phase.

Changes in the Tempo of Financial Asset Accumulation

Such shifts in the flow of funds for funding and investment activities have demonstrated a clear influence on the tempo of financial asset accumulation. In the domestic nonfinancial sector, the personal sector in particular, the balance of funds in financial assets had widened at a pace outstripping growth of nominal GNP. During the "asset price-steep rise" phase, the above-cited movements in the flow of funds and the influence of capital gains from investments in stock and other assets⁹ combined to accelerate the pace of asset accumulation (see Figure 40.9).

As noted earlier, assets in the corporate sector corresponded to about 50 percent of nominal GNP until about 1980. From that point on, their value began to climb faster. The pace quickened sharply in 1985 and thereafter, primarily in response to the increased flow of corporate funds into stocks and large-denomination time deposits. By 1989 the sector's assets were 120 percent of nominal GNP. In 1990, however, the asset balance began to contract, reflecting the sluggish pace of asset investments and the influence of capital losses from the drop in stock prices. Finally, in 1991, a net decline in investments in financial assets prompted yet a further contraction in the ratio of assets to nominal GNP.

Money accounts constitute the bulk of the balance in corporate and personal financial assets. Shifts in funding and investment in the personal and corporate sectors have had a greater impact on money supply (M2+CDs) and broadly defined liquidity than have changes in the course of the real economy. Specifically, the expanded volume of deposits, particularly those bearing market-determined interest rates, fueled money supply growth (average annual growth of M2+CDs) during the "asset price-steep rise" phase. Hence the tempo reached double-digit levels by the autumn of 1990, but in 1991 had dropped to as low as 2 percent.

In terms of supply, the balance sheet for the domestic nonfinancial sector as a whole helps to explain this volatility (see Figure 40.10). The expanded scale of loans to this sector from financial institutions was the key factor underlying money supply growth during the "asset price-steep rise" phase. Heightened de-

mand for funds during the economy's expansionary period accounted for part of the growth in the supply of loans. Also of major importance, however, was the enormous surge in loans to the three sectors (real estate, etc.) as well as to the corporate sector to profit from interest-rate arbitrage. Concerning the growth of credit other than loans, bank holdings of industrial bonds and CP expanded some ¥10 trillion in 1987 and again in 1988. This, too, served to sharpen the pace of growth in money supply.¹⁰

From the second half of 1990, money supply lost much of its expansionary momentum, chiefly as a result of the slowdown in the real economy and the subsequent slump in demand for funds. Other factors, such as the stagnant pace of transactions in real estate and other assets, the dwindling level of trading for arbitrage purposes, and the net decline in the holdings of corporate debentures and CP by financial institutions, have all contributed to the abrupt contraction of money supply growth. The shift of funds to postal savings and other instruments outside the money supply also has been influential.

Several factors suggest that it is inappropriate to view the recent slowdown of the growth in financial assets and liabilities as detrimental to the smooth operation of corporate finance. First, as a proportion of nominal GNP (see Figure 40.9), the balance of financial assets in the corporate sector has declined from its 1989 peak. Its level at the end of 1991, however, was still above that seen prior to 1985. Second, as underscored in the Bank of Japan's Short-Term Economic Survey of Enterprises, except for real estate and a few other business sectors, there is no apparent tightness in terms of financial position among corporate business sectors. Third, average contracted interest rates on loans have fallen steadily.

Observed in terms of recent trends in the flow of funds, the slowdown in the growth of financial assets/liabilities can be interpreted as a manifestation of the process of eliminating the excesses created by the intense fund-raising efforts for investment purposes witnessed during the recent period of steep rises in asset prices. It is thus important that attention should focus on the longer-term patterns of corporate and household funding and investment, and that future fund-flow trends should be viewed from the above perspective.

Notes

1. Financial surpluses/deficits in flow-of-funds accounts are the net of changes in the financial assets/liabilities of each economic sector for a given term. (A plus symbol indicates a surplus; a minus, a deficit.) With respect to real economic activity, such surpluses/deficits generally correspond to the balance between savings/investment in national income accounts for each sector.

2. Overseas financial surpluses/deficits in the flow of funds are linked with the international balance of payments and national income accounts as follows:

International balance of payments:

Exports – imports (current account balance)
 = increase (decrease) in external financial assets
 – increase (decrease) in external financial liabilities
 = financial deficit (surplus) in the overseas sector

In terms of national income accounts:

GNP = consumption + investment + exports – imports
 GNP – consumption = savings

Hence,

savings – investment = exports – imports
 = financial deficit (surplus) in the overseas sector

It thus follows that the financial deficit (surplus) in the overseas sector is understood to correspond to the surplus (deficit) in the Japanese current account balance and to equal excess savings (investment) in the national income accounts of the domestic economic sector.

3. As seen in note 2, Japan's current account surplus has been shown to equal the excess in domestic savings. The only significance in this, however, is that total domestic product and, by inference, national income, are larger than total national expenditure. In terms of the domestic financial situation (easy or tight), however, several factors traditionally come into play. They include (1) financial deficit levels in the corporate sector and elsewhere, the resultant stance of corporations toward fund-raising, and their leeway for drawing down liquidity; (2) the credit stance of financial institutions; and (3) the environment for bond issues and capital increases. Thus it should be noted that there is no direct relation between excess domestic savings discussed above and the domestic financial situation.

4. Figure 40.2 is a matrix-based representation of the broadly defined financial market. Shaded areas indicate the intermediation channels for funds supplied to both the domestic nonfinancial and overseas sectors, which are the final borrowers. Transactions within the financial sector (A) and the overseas sector (I), as well as funds supplied to the financial sector by the domestic nonfinancial and overseas sectors (B + C), are excluded. However, (B) and (C) are the key sources of funds to the financial sector and, as such, are considered equivalent to the funding (D + G) supplied to the domestic nonfinancial and overseas sectors through the intermediation of the financial sector.

5. In the corporate business sector, the ratio of funding to the financial deficit peaked in 1978, at sixfold. Unanticipated inventory drawdowns in this period contributed to a sharp contraction in the financial deficit (from ¥4.8 trillion in 1977 to ¥2.1 trillion in 1978). Also, the rate of return on financial assets had edged higher than the cost of fund-raising.

6. In the personal sector, financial assets generally accumulated at a faster tempo than nominal GNP growth. For this reason, the balance of financial assets in the sector has continued to trend upward in proportion to nominal GNP.

7. The rate of return on financial assets is calculated by dividing nonoperating profit by liquidity and trade credit (based on the Ministry of Finance's Financial Statements of Incorporated Businesses, quarterly, seasonally adjusted).

8. During the phase of brisk equity financing spawned by the sharp spiral in stock prices that began in 1986, companies could acquire funds at a cost below the long-term prime lending rate.

9. In calculating the balance of financial assets in flow-of-funds accounts, stock holdings in the corporate and personal sectors are re-evaluated in terms of market value.

10. Fundamentally, only financial institutions handling instruments that are elements of money supply can have any impact on its growth. For this reason, holdings of insurance companies, for instance, have to be deducted.

Table 40.1

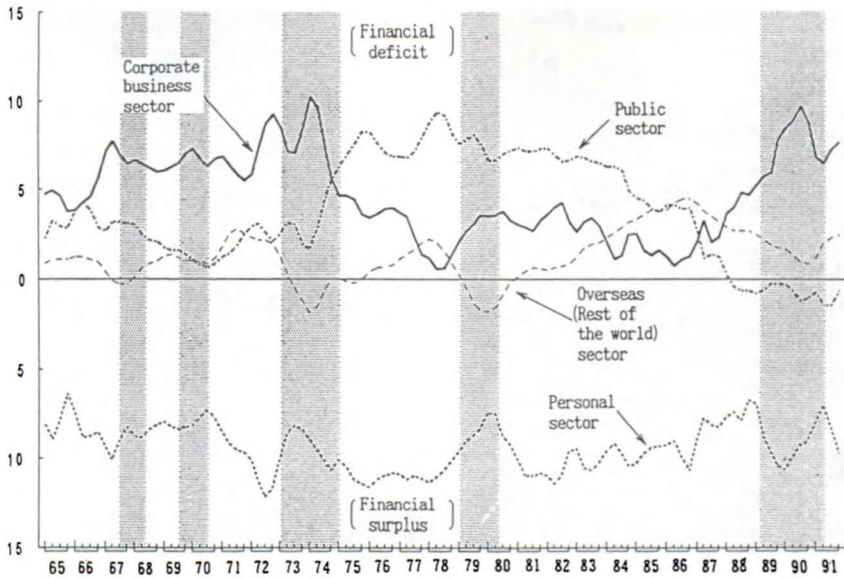
Financial Surplus/Deficit by Sector (percent of nominal GNP)

	65-74 average	75-84 average	85	86	87	88	89	90	91
Corporate business	-7.1	-2.9	-1.8	-1.3	-2.2	-4.5	-6.7	-9.0	-6.8
Personal	9.4	10.2	9.7	10.1	7.8	7.4	9.1	9.8	8.4
Public	-2.6	-7.1	-4.1	-4.1	-1.4	0.6	0.6	0.8	0.7
(Central government)	0.6	-3.8	-2.1	-2.3	-0.5	0.4	0.4	0.6	1.3
(Public corporations and local authorities)	-3.2	-3.3	-2.0	-1.8	-0.8	0.2	0.2	0.2	-0.7
(Domestic non-financial)	-0.4	0.2	3.7	4.7	4.2	3.5	3.0	1.6	2.2
Overseas (Rest of the world)	-0.7	-0.8	-3.6	-4.2	-3.6	-2.7	-2.0	-1.2	-2.1

(¥ 100 bil)

	65-74 average	75-84 average	85	86	87	88	89	90	91
Corporate business	-51.4	-66.3	-59.5	-43.3	-77.2	-169.3	-268.6	-386.8	-311.1
Personal	67.7	233.0	311.0	337.8	273.9	277.4	363.9	421.4	381.9
Public	-19.1	-162.4	-131.7	-137.6	-48.1	21.8	23.3	33.1	29.7
(Central government)	4.4	-86.2	-66.9	-76.6	-19.1	15.2	16.3	25.6	60.5
(Public corporations and local authorities)	-23.4	-76.2	-64.8	-60.9	-29.0	6.5	7.0	7.5	-30.8
(Domestic non-financial)	-2.8	4.3	119.8	156.8	148.5	129.9	118.5	67.7	100.5
Overseas (Rest of the world)	-5.2	-18.9	-115.2	-141.8	-125.4	-101.9	-78.5	-52.0	-97.7

Note: Minus indicates financial deficit.

Figure 40.1 Financial Surplus/Deficit by Sector

- Notes: 1. Seasonally-adjusted data, three-quarter weighted moving average (weighting: 1:2:1)
 2. Shaded areas indicate periods of official discount rate increases.

Table 40.2

Fund Raising and Investment by the Domestic Nonfinancial Sector
 (¥ 100 billion)

		88	Y/y % chg	89	Share (%)	Y/y % chg	90	Share (%)	Y/y % chg	91	Share (%)	Y/y % chg
Fund raising		832.1	2.5	1,143.7	100.0	37.5	1,053.5	100.0	-7.9	607.9	100.0	-42.3
By sector	Corporate business	541.9	27.0	729.7	63.8	34.7	667.4	63.4	-8.5	383.2	63.0	-42.6
	Personal	221.1	-13.3	320.4	28.0	44.9	258.0	24.5	-19.5	136.8	22.5	-47.0
	Public	69.1	-46.7	93.6	8.2	35.5	128.1	12.2	36.9	87.9	14.5	-31.4
By type of liability	Borrowings	584.7	-1.8	773.6	67.6	32.3	729.7	69.3	-5.7	476.4	78.4	-34.7
	From private fin. insts.	473.5	-4.4	655.0	57.3	38.3	603.0	57.2	-7.9	337.0	55.4	-44.1
	From public fin. insts.	111.2	11.1	118.7	10.4	6.7	126.7	12.0	6.7	139.4	22.9	10.0
	Securities	156.4	-7.5	294.6	25.8	88.3	227.4	21.6	-22.8	166.0	27.3	-27.0
	Government bonds	49.3	-35.0	34.3	3.0	-30.6	61.6	5.9	79.9	60.1	9.9	-2.5
	Stocks	52.3	26.7	101.2	8.9	93.7	44.4	4.2	-56.2	12.8	2.1	-71.2
	External bonds	44.4	16.2	96.3	8.4	212.1	38.4	3.6	-60.1	67.5	11.1	75.7
	CP	75.9	4.5	37.8	3.3	-50.2	27.0	2.6	-28.7	-33.6	-5.5	-
	Foreign debts	15.1	-49.7	37.7	3.3	250.3	69.3	6.6	83.7	-1.0	-0.2	-
Fund investment		1,060.4	0.6	1,286.6	100.0	21.3	1,137.7	100.0	-11.6	693.7	100.0	-39.0
By sector	Corporate business	400.5	15.3	395.5	30.7	-1.3	220.6	19.4	-44.2	-13.5	-1.9	-
	Personal	586.1	-4.2	786.4	61.1	34.2	746.9	65.6	-5.0	568.6	82.0	-23.9
	Public	73.7	-22.0	104.7	8.1	42.0	170.2	15.0	62.5	138.7	20.0	-18.5
By type of asset	Cash & demand deposits	94.0	78.3	46.6	3.6	-50.4	45.8	4.0	-1.8	123.3	17.8	27.1
	Time deposits (regulated rates)	-179.0	-	-476.6	-37.0	-	-690.4	-60.7	-	297.6	42.9	-
	Deposits (unregulated rates)	537.7	34.3	1,009.4	78.5	87.7	1,077.6	94.7	6.8	-228.1	-32.9	-
	Large-denomination time deposits+MNCs	509.1	21.5	688.4	53.5	35.2	469.8	41.3	-31.7	136.9	19.7	-70.9
	Small MNCs	-	-	286.4	22.3	-	589.3	51.8	21.1	-375.7	-54.2	-
	CDs	20.6	-	18.5	1.4	-10.3	-22.6	-2.0	-	-9.9	-1.4	-
	Postal savings	77.7	6.6	89.9	7.0	15.7	7.7	0.7	-91.4	187.2	27.0	24.2
	[Cash, deposits & CDs total]	[530.4]	[9.9]	[669.2]	[52.0]	[26.2]	[440.7]	[38.7]	[-34.1]	[380.0]	[54.8]	[-13.8]
	Trusts	112.7	-12.5	139.8	10.9	24.1	94.5	8.3	-32.4	66.5	9.6	-29.6
	Investment trusts	66.5	-42.2	21.5	1.7	-67.8	-25.4	-2.2	-	-44.7	-6.4	-
	Insurance	235.4	30.1	252.9	19.7	7.4	223.8	19.7	-11.5	190.8	27.5	-14.8
	Securities	-54.3	-	1.5	0.1	-	169.3	14.9	112.7	-28.1	-4.1	-
	Stocks	-13.9	-	21.6	1.7	-	53.2	4.7	2.9	-40.4	-5.8	-
	CP	16.9	18.1	9.8	0.8	-42.0	23.3	2.1	2.4	-9.3	-1.3	-
	Government current deposits	0.1	-21.3	1.2	0.1	9.1	-1.2	-0.1	-	0.3	0.0	-
	Deposits with Trust Fund Bureau	72.5	-0.3	87.0	6.8	20.0	101.0	8.9	16.1	105.5	15.2	4.5
	Foreign credits	80.1	-0.8	103.7	8.1	29.5	111.6	9.8	7.6	32.6	4.7	-70.8

Notes: 1. Foreign-currency deposits included in 'Deposits with unregulated rates'.

2. Foreign exchange fund financing bills not included in fund raising by the public sector.

3. Investment trusts not included in securities.

Table 40.3

Flow-of-Funds from/to the Overseas Sector (¥ 100 billion)

	88		89		90		91				
		Y/y % chg		share	Y/y % chg		share	Y/y % chg		share	Y/y % chg
Financial deficit (-) in the overseas sector	-101.9	—	-78.5	—	—	-52.0	—	—	-97.7	—	—
Foreign claims (foreign exchange reserves excluded)	383.8	8.1	443.4	100.0	15.5	187.6	100.0	-57.7	116.4	100.0	-38.0
Investment in foreign securities	111.6	-13.4	157.7	35.5	41.2	58.2	31.0	-63.1	99.9	85.8	71.6
Financial institutions	79.6	1.9	117.9	25.6	48.1	16.8	9.0	-85.7	88.1	75.7	5.2...
Corporate business sector	32.0	-36.9	39.7	9.0	24.1	41.4	22.0	4.1	11.6	10.2	-71.4
Bonds	107.8	3.3	132.3	29.8	22.8	48.6	25.9	-63.3	94.9	81.6	95.3
Stocks	3.9	-84.2	25.4	5.7	6.5...	9.6	5.1	-62.2	4.9	4.2	-48.4
Long-term loans extended	19.6	-17.5	31.2	7.0	59.3	32.3	17.2	3.6	17.7	15.2	-45.1
Foreign direct investment	43.6	57.3	61.3	13.8	39.9	70.1	37.4	14.4	41.6	35.7	-40.7
Short-term external assets of authorized foreign exchange banks	191.3	4.4	191.1	43.1	-0.1	79.8	42.5	-58.2	-52.1	-44.8	—
Foreign debts	302.5	5.5	346.4	100.0	14.5	123.5	100.0	-64.4	7.4	100.0	-94.0
Investment in domestic securities	41.0	21.1...	110.9	32.0	2.7...	46.6	37.7	-58.0	149.0	2,002.8	3.2...
Stocks	8.3	—	8.9	2.6	7.7	-19.8	-16.0	—	62.7	841.9	—
Domestic bonds	-12.9	—	-2.9	-0.8	—	22.8	18.4	—	22.7	305.2	-0.2
External bonds	46.6	4.0	104.9	30.3	2.3...	43.6	35.3	-58.4	63.7	855.7	46.0
Foreign debts of the corporate business sector (Euroyen impact loans etc.)	17.0	-34.2	42.8	12.3	2.5...	61.9	50.2	44.9	-1.0	-12.8	—
Short-term external liabilities of authorized foreign exchange banks	248.6	-18.2	202.6	58.5	-18.5	62.9	50.9	-69.0	-177.5	-2,385.3	—
Foreign exchange reserves	20.6	-63.9	-18.4	—	—	-12.2	—	—	-11.3	—	—

Figure 40.2 Broadly Defined Financial Market (in matrix form)

		Financial	Lenders of funds		
			Domestic non-financial	Overseas (Rest of the world)	
Borrowers of funds	Financial	[Transactions within financial sector] (A)	Deposits, trusts, investment trusts, insurance, financial debentures, etc. (B)	Inflow of Euro-currencies to domestic market etc. (including offshore market) (C)	Fund raising in domestic and overseas markets by financial sector ⇒
	Domestic non-financial	Domestic loans, investment in domestic securities (D)	Investment in domestic securities (Securities market) (E)	Loans to domestic market, investment in domestic securities (Foreign capital market) (F)	Fund raising by domestic non-financial sectors ⇒
	Overseas (Rest of the world)	Investment in foreign securities and other foreign claims (including offshore market) (G)	Foreign securities investment, foreign direct investment, etc. (H)	[Transactions within overseas sector] (I)	Fund raising from Japan by overseas sector (Japan's foreign claims) ⇒
		↓ Financial investment in domestic and overseas markets by financial sector	↓ Financial investment by domestic non-financial sectors	↓ Financial investment in domestic market by overseas sector (Japan's foreign debts)	

Table 40.4

Fund Intermediation in the Broadly Defined Financial Market
 (domestic nonfinancial sector and overseas sector; ¥ 100 billion)

Destination	Market [intermediation channel]	75-84		89		90		91		Y/y % chg
		average	Share (%)		Share (%)		Share (%)		Share (%)	
① Domestic non- financial sector	Financial institutions (D)	468.0	79.9	1,027.8	64.3	796.4	65.1	494.3	70.3	-37.9
	Loans	320.0	54.6	773.6	48.4	729.7	59.7	476.4	67.7	-37.4
	Private	215.9	36.9	655.0	41.0	603.0	49.3	337.0	47.9	-44.1
	Public	104.2	17.8	118.7	7.4	126.7	10.4	139.4	19.8	10.0
	Securities*	148.0	25.3	226.0	14.1	63.1	5.2	42.2	6.0	-33.1
	CP*	—	—	28.2	1.8	3.5	0.3	-24.3	-3.5	—
	Securities market* (E)	39.2	6.7	5.1	0.3	139.7	11.4	-48.5	-6.9	—
	Personal	22.0	3.8	-6.0	-0.4	52.3	4.3	-45.8	-6.5	—
	Corporate business	13.3	2.3	46.1	2.9	75.7	6.2	-17.4	-2.5	—
	Public	3.2	0.6	-28.7	-1.8	12.9	1.1	2.8	0.4	-78.0
	Foreign capital market (F)	14.6	2.5	139.4	8.7	111.0	9.1	152.3	21.7	37.2
	Domestic securities*	17.4	3.0	101.7	6.4	41.6	3.4	153.2	21.8	3.7 fold
	Others	-2.8	-0.5	37.7	2.4	69.3	5.7	-1.0	-0.1	—
	Total	521.8	89.1	1,172.4	73.4	1,047.0	85.6	598.1	85.1	-42.9
② Overseas sector	Financial institutions (G)	38.7	6.6	354.1	22.2	90.5	7.4	75.9	10.8	-16.2
	Foreign sec. investment*	11.5	2.0	117.9	7.4	16.8	1.4	88.1	12.5	5.2 fold
	Others	27.1	4.6	236.2	14.8	73.6	6.0	-12.2	-1.7	—
	Others (H)	22.2	3.8	89.3	5.6	97.1	7.9	40.5	5.8	-58.3
	Foreign sec. investment*	7.7	1.3	39.7	2.5	41.4	3.4	11.8	1.7	-71.4
	Foreign direct investment	7.4	1.3	46.9	2.9	56.6	4.6	36.1	5.1	-36.2
	Others	7.1	1.2	2.6	0.2	-0.8	-0.1	-7.4	-1.1	—
	Change in foreign exchange reserves (#)	3.0	0.5	-18.4	-1.2	-12.2	-1.0	-11.3	-1.6	—
	Total	63.9	10.9	424.9	26.6	175.5	14.4	105.1	14.9	-40.1
	①+②	585.7	100.0	1,597.3	100.0	1,222.5	100.0	703.3	100.0	-42.5

Total intermediation

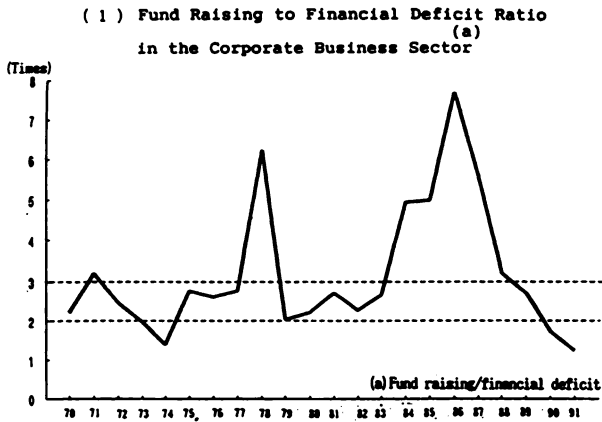
via financial insts. (D+G) 506.7 86.5 1,381.9 86.5 886.9 72.5 570.2 81.1 -35.7

Supply of funds through securities* 223.8 38.2 518.6 32.5 306.2 25.0 222.6 31.6 -27.3

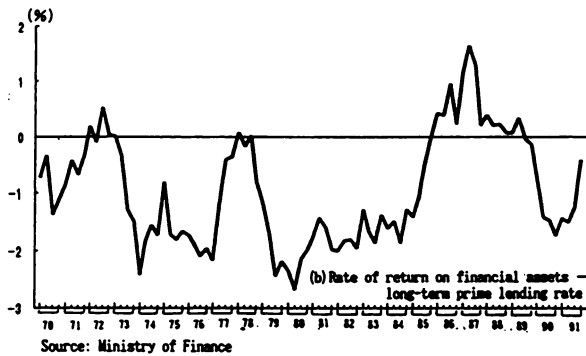
Total domestic markets (D+E) 507.2 86.6 1,032.9 64.7 936.1 76.6 445.9 63.4 -52.4

Total international markets (F+G+H+#) 78.5 13.4 564.4 35.3 286.5 23.4 257.4 36.6 -10.1

Figure 40.3 Fund Raising in the Corporate Business Sector



(2) Rate of Return on Financial Assets and Cost of Fund Raising (b)



(3) Stock Prices
(Nikkei Stock Average)

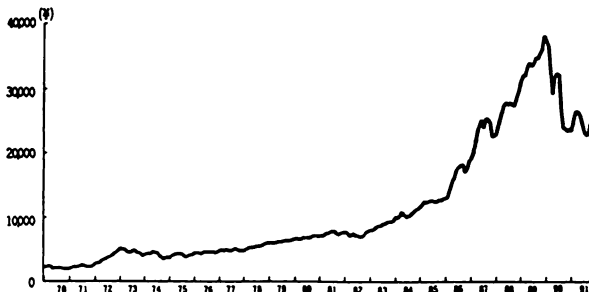


Figure 40.4 Changes in the Fund Raising and Investment Activity of the Corporate Business Sector

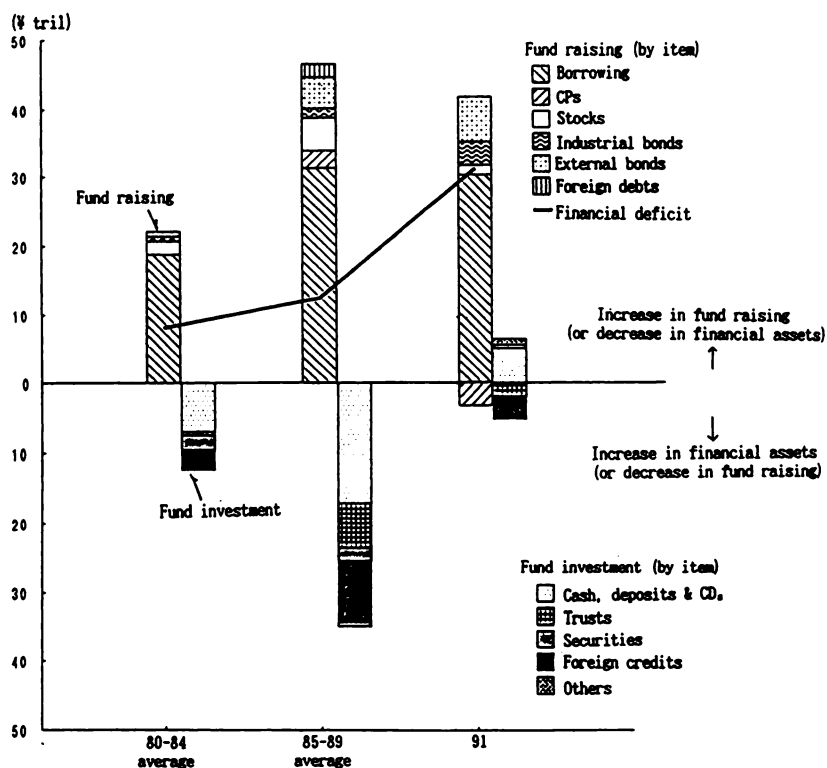


Figure 40.5 Changes in the Fund Raising and Investment Activity of the Personal Sector

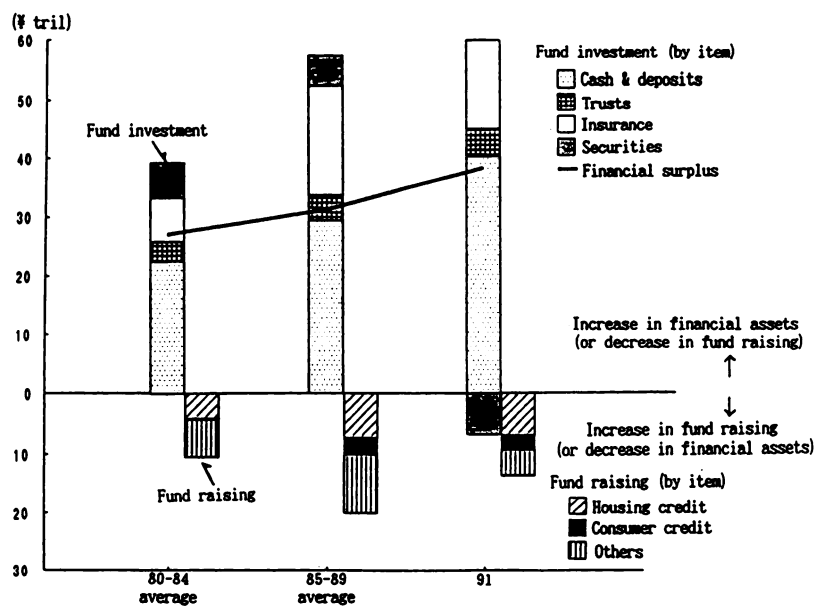


Figure 40.6 CP Issue Rate, Interest Rate on Large-Denomination Time Deposits and Short-Term Prime Lending Rate

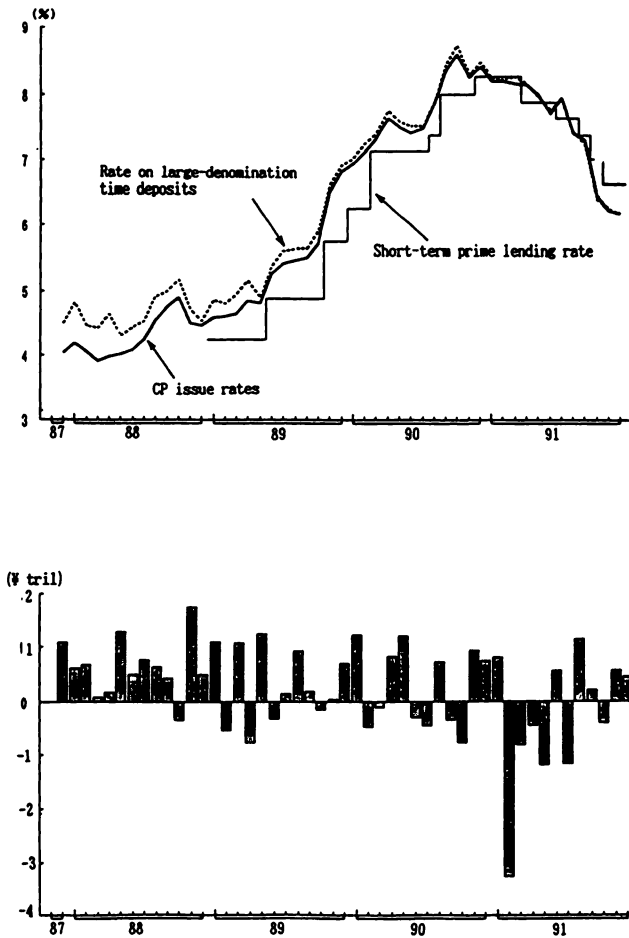
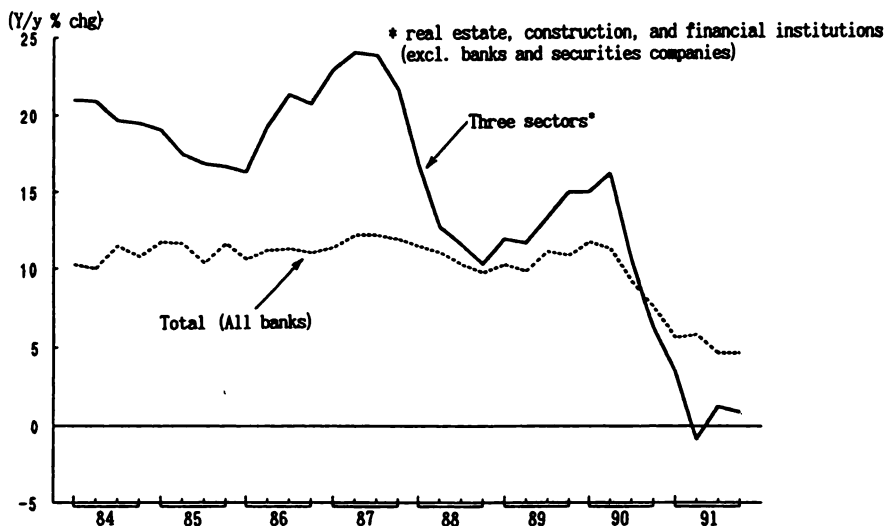
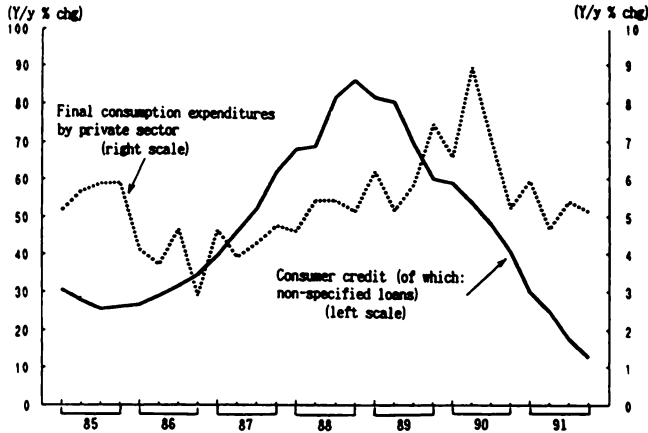


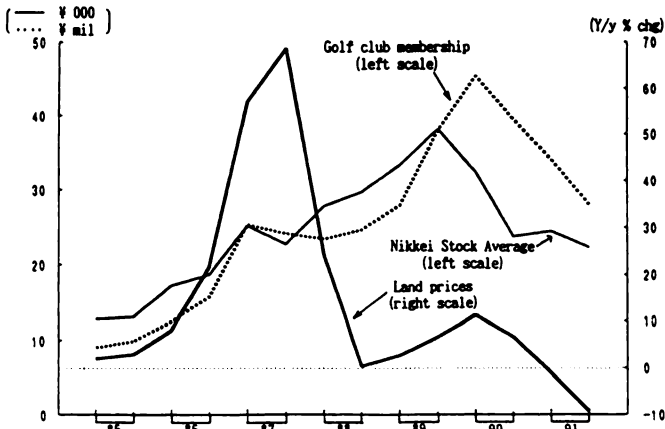
Figure 40.7 Lending by Sector

Source: Bank of Japan, 'Loans and Discounts Outstanding by Industry'.

Figure 40.8 Consumer Credit**(1) Consumer Credit and Final Consumption Expenditures of the Private Sector**

Sources: Bank of Japan, Economic Planning Agency.

Note: Consumer credit (of which: non-specified loans) represents All banks' consumer/housing credit less loans for consumer goods and services.

(2) Stock Prices, Land Prices, and Golf Club Memberships

Source: Nikkei Industrial Daily.

Golf club membership is the average of 500 major clubs.

Notes: Land prices are for residential districts in Tokyo, and adjacent areas.

Data source for the first half of the year: National Land Agency, 'Prefectural Land Prices'; for the second half, 'Published Land Prices'.

Figure 40.9 Financial Assets Outstanding at End of Period

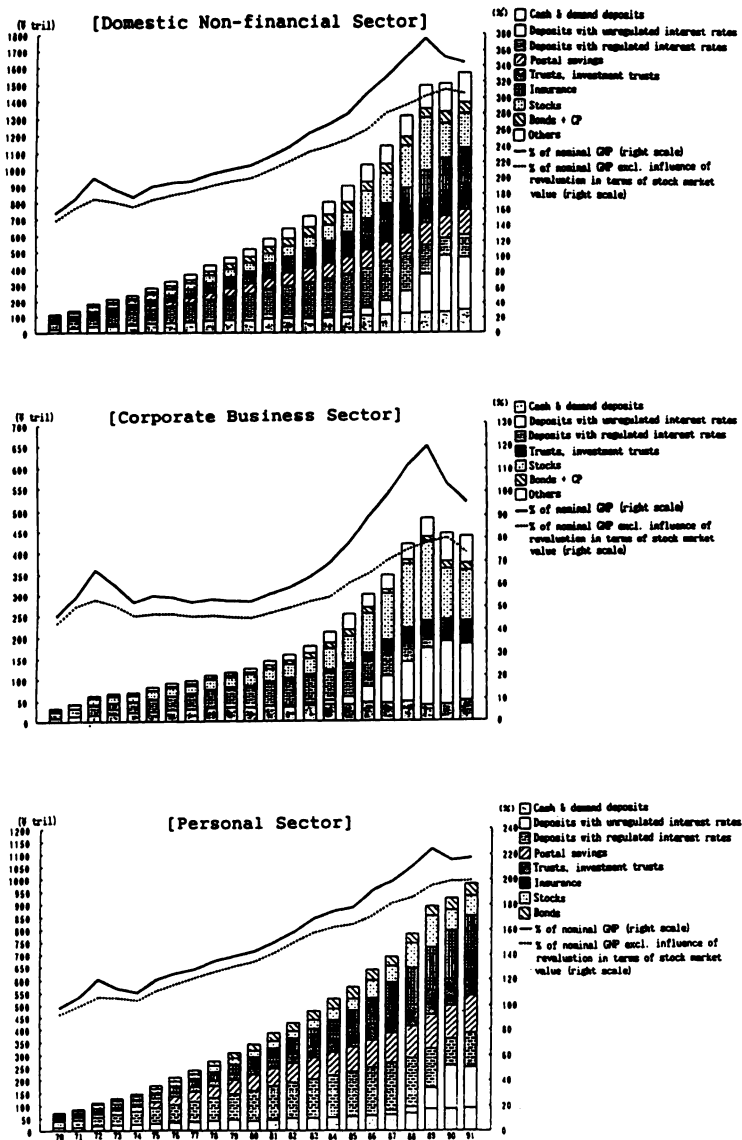
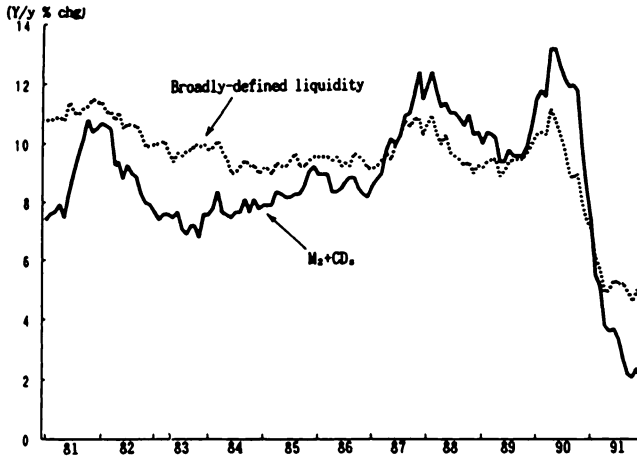
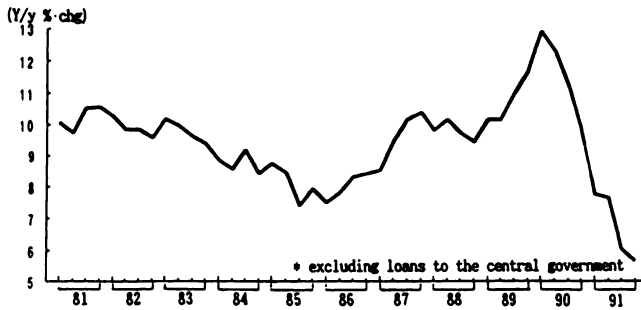


Figure 40.10 Money Stock

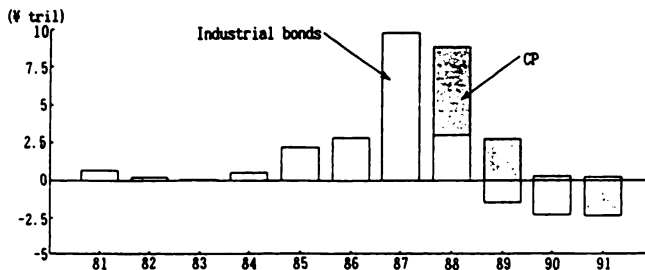
(1) Money Stock and Broadly-defined Liquidity



(2) Loans to Domestic Non-financial Sectors*



(3) Financial Institution Holdings of Industrial Bonds and CP (increment)



JOHN C. DAWSON

Current Saving-Investment Process Analysis: Indonesia

(1992)

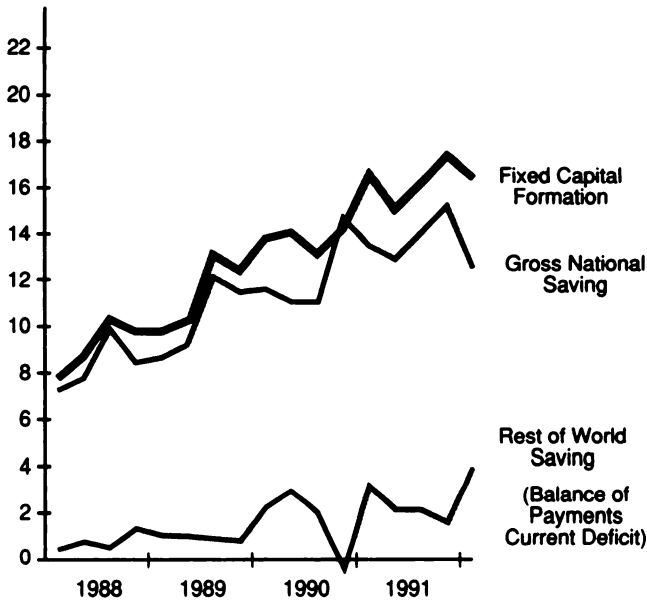
One important use of the flow-of-funds accounts is for the analysis and evaluation of current financial policy. This paper introduces one approach to this task. Our objective is to use the flow-of-funds data to observe the effectiveness of monetary, fiscal, and balance of payments policies in stabilizing the Indonesian financial system. In doing so we shall relate these policies to a comprehensive view of the operation of the financial system called the saving-investment process. Our procedure will be to present flow-of-funds data¹ in a series of charts and consider the implications of each.

As we approach Figure 41.1, which portrays the saving-investment account for 1988–91, we can recall the general cyclical situation in Indonesia. The years 1989 and 1990 were essentially boom years for the Indonesian economy, topped off by the stimulating effects on oil export revenues of the Gulf War. In 1991, however, the signs indicate a substantial slowdown in the growth of aggregate demand. This is true of GDP growth, export growth, and the investment projects data. In Figure 41.1 the fixed capital formation curve shows the 1989–90 boom and its leveling off during 1991.² This curve is important for our analysis because it represents the basic financial task; it is a key measure of how much financing must be provided.

The other two curves in Figure 41.1 show the saving side of the account—national saving and rest-of-world saving. Rest-of-world saving is essentially the current deficit in the Indonesian balance of payments. We see that this deficit rises with the boom in 1990, falls sharply with the Gulf War in 4Q90, and

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Figure 41.1 Fixed Capital Formation and Savings (billions of rupiah)



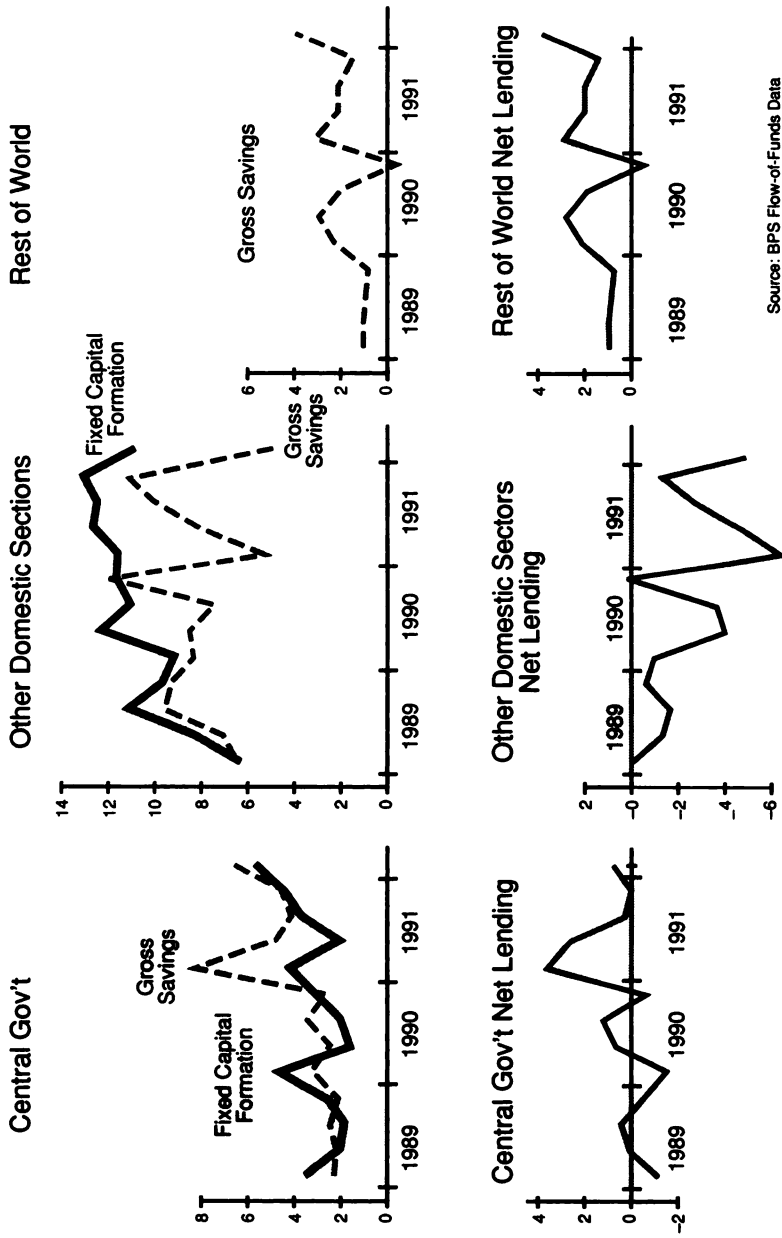
quickly rises to a new, higher level throughout 1991. This rising deficit is matched by a widening gap between national saving and fixed capital formation. But on the whole, national saving rises as a trend along with the real investment curve.

Our basic analytical objective is to demonstrate *how* capital formation is ultimately financed by these forms of saving—that is, to trace how saving is placed with the financial system, flows through financial channels and financial institutions, and ultimately into the borrowing that finances real investment. To do so we must first divide the economy into sectors and derive the net borrowing or net lending for each sector as the difference between the sector's gross saving and fixed investment. This is done in Figure 41.2.

At the right in Figure 41.2, in the rest-of-world column, we see a repeat of the rest-of-world saving curve of Figure 41.1 with the up-and-down pattern of 1990 and the return to a high trend in 1991. Because the rest-of-world does not carry out any Indonesian capital formation, its entire gross saving is placed into the net lending curve at the lower right—that is, rest-of-world gross saving (Indonesia's balance of payments current deficit) will equal rest-of-world lending to Indonesia minus any borrowing from Indonesia.

At the left in Figure 41.2 is a similar column of curves for the Central Government. Its fixed capital formation, apart from the seasonal pattern, is rather level in 1989 and 1990 but shows a marked increase moving across 1991. The government's gross saving—roughly its current budget surplus—is

Figure 41.2 Sector Saving, Fixed Capital Formation, and Net Lending
(billions of rupiah)



Sources: BPS Flow-of-Funds Data

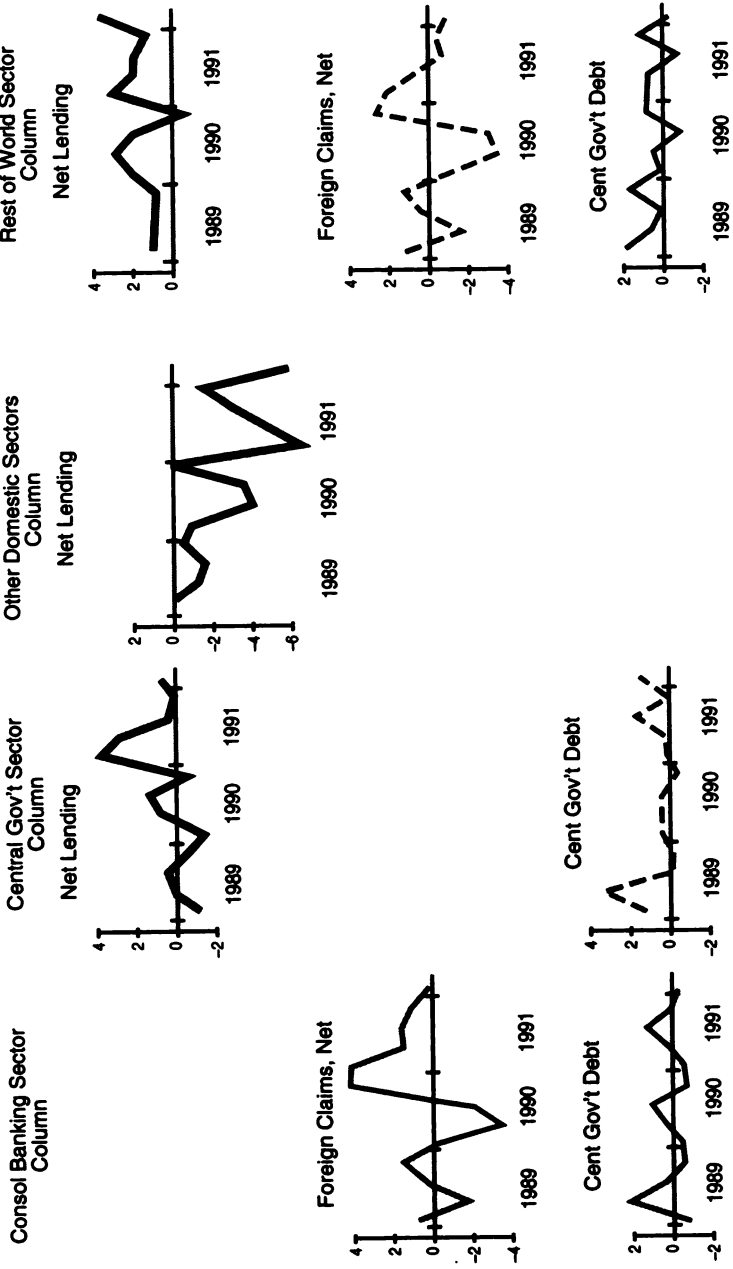
also stable in our first two years but rises sharply to a peak in early 1991. This peak reflects the receipt of added oil revenues stemming from the Gulf War. The difference between these curves—the government's surplus or deficit—is shown at the lower left. Considering the annual trend, we see that in 1989 there is a modest deficit followed by a movement upward to a substantial surplus in 1991. Most of this surplus is in the first half of 1991; by year's end the budget is nearly in balance.

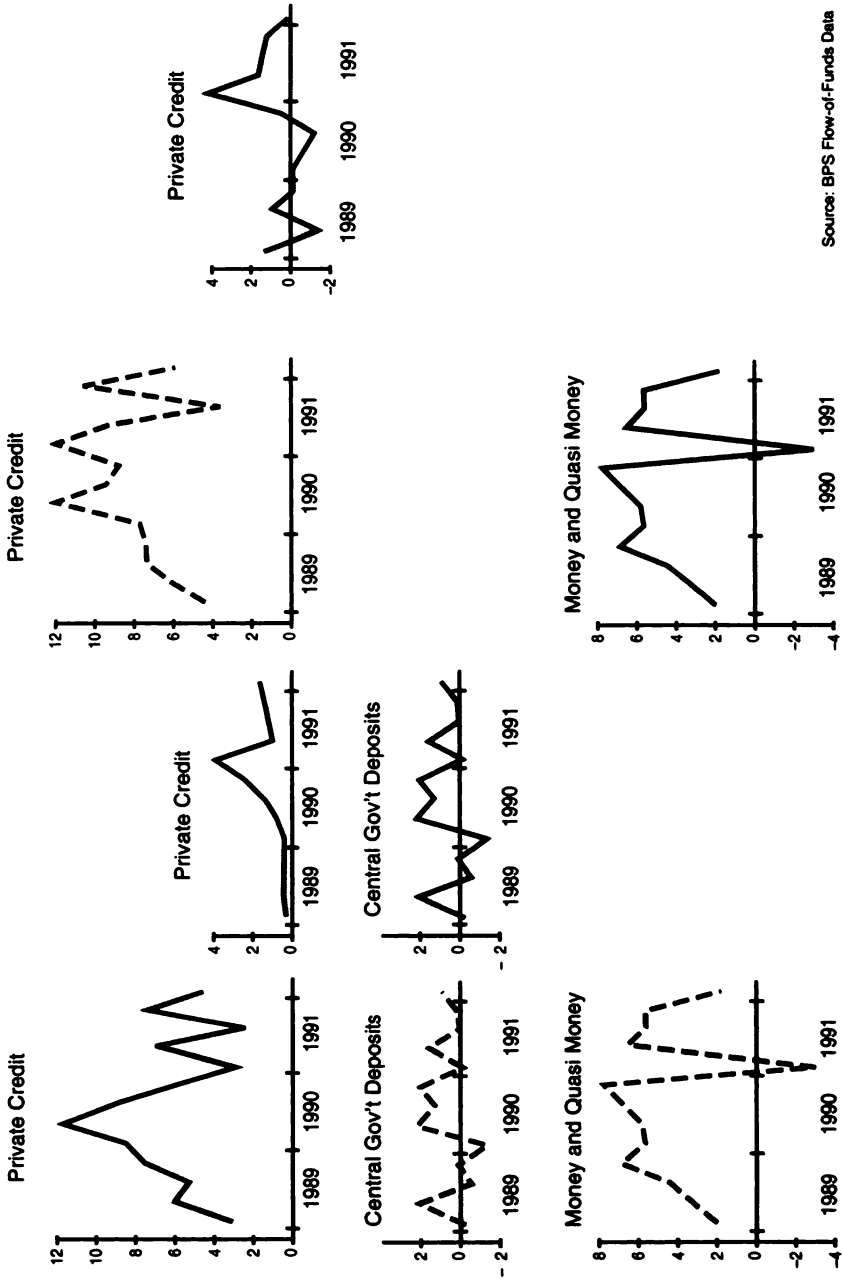
Finally, in the center of Figure 41.2 we have the other domestic sectors. This omnibus sector, which includes private and public enterprises, carries out the bulk of Indonesia's capital formation, and we note a rising trend in this curve that reflects the 1989–90 boom. The trend of this sector's gross saving is much flatter, although it peaks sharply in late 1990, in reflection of the public enterprise profits from the Gulf War. The net lending curve of the other domestic sector is entirely negative, thus indicating net borrowing, and its trend is quite sharply downward.

If we now consider horizontally the three net lending/borrowing curves in Figure 41.2, we can characterize the operation of the financial system because the net borrowing on these curves must be financed by and is equal to the net lending. Thus in 1990 with the government budget balanced, the other domestic sector's net borrowing must have come from the net lending by the rest-of-world. In 1991 the net lending of both the Central Government and the rest-of-world financed the growing net borrowing of the other domestic sector. In the analysis below our overall focus will be on *how* these sectors financed one another—that is, on what borrowing and lending flows took place. To observe these financial flows we shall analyze each sector net lending/borrowing into flows of the various types of financial instruments involved, an analysis provided by the flow-of-funds account data.

Figure 41.3 presents what we call a financial flow matrix. Its columns represent sectors—as in Figure 41.2, except for the addition at the left of a column for the consolidated banking sector. Each column presents at the top the sector's net lending/borrowing³ and under this a breakdown showing the sector's borrowing flows (dashed curves for increases in financial liabilities) and its lending flows (solid curves for increases in financial assets), which combine to equal the sector's net lending/borrowing. These lower curves are arranged in rows, each row representing the flows in a financial instrument in the Indonesian financial system. Thus we have rows for foreign claims, central government debt, private credit (borrowing by the other domestic sector), central government deposits, and money plus quasi-money.⁴ On each row the dashed liability flow curves must sum horizontally to the total of the solid asset flow curves—borrowing must equal lending for each financial instrument. So the interlocking nature of the flow-of-funds matrix is reflected in the display. These horizontal and vertical social accounting relationships are what will enable us to trace financial flows through the system—that is, to investigate the saving-investment process.

Figure 41.3 Financial Flow Matrix (billions of rupiah)





Source: BPS Flow-of-Funds Data

We begin by examining the rest-of-world curves in Figure 41.3. Rest-of-world net lending is there analyzed into three components: rest-of-world lending by the acquisition of Indonesian government debt, lending by the acquisition of Indonesian private claims, and the offsetting item net foreign claims issued to Indonesia. The foreign claim, net is the banking system's foreign exchange balance—essentially Indonesia's international reserves—so this curve behaves as a residual in the account, reflecting Indonesia's "overall" balance of payments. For example, during 1990 the net lending curve at the top first rises (as the Indonesian deficit rose in response to the boom conditions) and then turns down sharply (in response to oil export expansion in the Gulf War). Since neither of these movements is matched in the government debt and private credit lending curves below, we find a corresponding trough in the foreign claims curve, Indonesia's reserves. And moving left in Figure 41.3 to the banking sector, we can trace a similar trough in the foreign claims curve there, since apart from discrepancies, these curves are identical. This pathway is a common route for balance of payment movements to impact on the banking system, a matter to which we will return.

We have noted that as we enter 1991 the balance of payments current deficit rose sharply as the Gulf War ended and then maintained itself at a new, higher level, as we observe in the rest-of-world's net lending curve. The sharp first-quarter rise is in this case matched by a sharp rise in the private credit flow, so there is very little movement in the foreign claims curve. But throughout 1991 this private credit spurt tapers off to a low level. As a consequence, the foreign claims curve also trends downward, with the large early-quarter foreign exchange accumulations moving down to zero. And once again this pattern is repeated in the banking sector's curve. Nevertheless, for most of 1991 the rest-of-world's net lending to Indonesia was primarily carried out via the private credit channel. We have in this flow a partial answer to how the rest-of-world's net lending financed the other domestic sectors—the key question posed in Figure 41.2.

We now do a similar analysis of the Central Government sector, making use of its column of curves in Figure 41.3. As we noted, the rising trend on the government's net lending curve shows the government account moving into balance in 1990 and into substantial surplus in 1991 as a result of the Gulf War. How did the government dispose of its surplus? The curves show in 1990 a large accumulation of government deposits, which, of course, provided funds to the banking system. And in 1990, but increasingly in 1991, the government began a major extension of private credit by means of cash loans to state enterprises. This flow continues through 1991 even though the government surplus returns to zero in the third and fourth quarters. This credit flow from the government is the main answer to how in 1991 central government net lending financed the other domestic sectors—a second key question posed in Figure 41.2.

We now move to the financing of the other domestic sector in Figure 41.3. This sector engages in two major financial activities: (1) obtaining funds

(i.e., borrowing via private credit) and (2) the placement of funds into currency and deposits (i.e., into money and quasi-money deposits with banks). The increased net borrowing of this sector in 1990 and 1991 is explained in the first instance by noting that the private credit borrowing is on average larger than the placement into the financial assets. How has the other domestic sector been able to do so?

First let us consider the sector's borrowing. If we move horizontally from the dashed private credit curve to the solid private credit curves of the other sectors we will be observing the lending done by those sectors. We have already discussed the private credit lending patterns of the rest-of-world and Central Government sectors. Now we can see that the other domestic sector obtains the bulk of its borrowing from the banking sector. In fact, during 1989 and up to the 2Q90 peak in private credit, the banking system was the overwhelming lender. Then as bank credit extension swung sharply downward, it was replaced by credit from the other two sectors, and the borrowing total experienced a second peak in 1Q91. Finally, as government and rest-of-world lending trended downward in later 1991, the banks compensated with rising (though erratic) lending, and the borrowing total maintained itself despite sharp quarterly ups and downs. However, at present the private economy (our other domestic sector) has three major lenders to appeal to. And one answer to why this sector can borrow more than it advances to the banking system in currency and deposits is that it has these two other lenders to borrow from.

We view the private economy—our other domestic sector—as the origin of the demand for private bank credit; in bank lending the initiative is generally on the borrowing side of the market. We will explore below the causes of this demand for credit. But at present we shall consider how the banking system is able to respond effectively to supply this credit. In doing so we shall, of course, be analyzing the role of the banking system as a financial intermediary and, in particular, the major flow of funds that originates with the other domestic sector (by its placement of funds into money and quasi-money) and that is returned to this sector by the flow of private credit from the banking system.

Because the banking sector does relatively little gross saving and real investment, the accumulation of the financial assets that make up its portfolio (the three solid banking sector curves in Figure 41.3) approximately equals its increase in financial liabilities (the two dashed curves in Figure 41.3), which make up its issues of currency and deposits.⁵ This equality accounts for the system as a financial intermediary.

It will be helpful to consider further the three elements of the banking sector's portfolio. In viewing the rest-of-world earlier we saw that the upshot of the balance of payments often is its impact on Indonesia's international reserves (i.e., on the banking sector's foreign claims, net). So the banking system has no immediate control over this part of its portfolio. Similarly, its lending on account of central government debt is basically a response to the government's seasonal

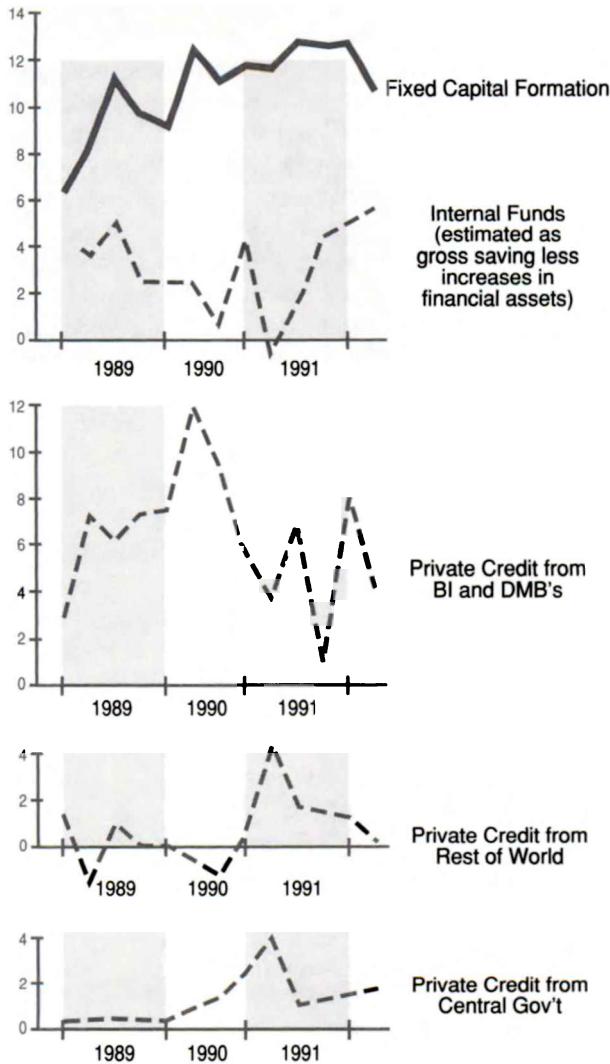
credit needs, the central bank being the lender of last resort in this market. So this second part of its portfolio is also not under the banking system's immediate control.⁶ Finally, to the extent that the banking system responds to the private demand for credit—as it usually does—this part of its portfolio also is under limited control. Of course, the expansion of the banking system's portfolio as a whole (and the equal expansion of banking system liabilities) is under the influence of Bank Indonesia's monetary and credit policies. But in our analysis of these policies below we shall judge this influence to be at most times not a very close control. So we view the overall expansion of the banking system—especially in these years of financial deregulation—as under strong financial market influence via its portfolio.

Let us now examine the operation of the banking system in Figure 41.3, especially its ability to extend private credit to the other domestic sectors. During 1989 the system was expanding rapidly as a straightforward intermediary—that is, its private credit extension rose, and this was paralleled by a corresponding rise in the issue of money and quasi-money. These movements can both be traced horizontally to the other domestic sector curves. One part of the other domestic sector was placing added saving with banks; another part of it was expanding its bank borrowing.

As we enter 1990, the pattern changes. The money and quasi-money flow stops growing, but private credit extension still grows sharply. How is this possible? The answer is that another part of the banking system's portfolio is contracting, namely foreign claims, net.⁷ We recall that foreign claims, net, was declining because of the boom-induced increase in the balance of payments deficit. We have here a new pattern of intermediation, a route by which in the first two quarters of 1990 the expanded net lending by the rest-of-world was shifted via foreign claims, net, to the banking system and thence by a portfolio shift to the other domestic sector via private credit. We may note also that during the second half of 1990 exactly the opposite occurred. The banking system was able to take on the added reserve balances resulting from the Gulf War without an alteration in its monetary curve, because by then the extension of private credit was declining sharply. Finally, during 1991 the banking system's foreign claims curve declines steadily. And this permitted the modest (though erratic) expansion of private credit with an essentially level monetary issue curve. So it is apparent that portfolio flow shifts in the banking system play a major role in explaining the flow of private credit to the other domestic sector.

We return briefly now to the other domestic sector columns in Figure 41.3 to assemble our explanation of the financing of this sector's growing deficit in 1990 and 1991. The sector was able to borrow more funds via private credit than it placed with the banks in currency and deposits because (1) in these years the central government and the rest-of-world increased their direct lending to this sector and (2) banking sector portfolio flow shifts (especially vis-à-vis foreign claims, net) permitted the private credit flow to exceed the monetary expansion.⁸

Figure 41.4 Other Domestic Sectors Finance of Investment
(billions of rupiah)



Source: BPS Flow-of-Funds Data

The second factor accounts for the borrowing peak in 2Q90 and the first factor for the peak in 1Q91.

To complete our examination of the saving-investment process for Indonesia it is essential to press further our analysis of the other domestic sector. We need

to connect the financing patterns we have been discussing to the financing of gross capital formation. And as we saw in Figure 41.2, the bulk of this real investment is carried out by the other domestic sector. Even though our data for this sector are largely residual estimates, the substantive importance of the sector—essentially the whole private economy—justifies our speculations on it.

The other domestic sector is a complex one consisting of widely diverse parts: public enterprises, private businesses, provincial and local governments, non-bank financial institutions, and households. For our analysis we shall view the sector's behavior as dominated by two groups: a large, household-like group, and a large, business enterprise-like group. We will assume that the household group acquires all of the other domestic sector's currency and deposits and that any leftover gross saving becomes internal finance in the acquisition of real investment. In parallel fashion we will assume that all the borrowing is carried out by the enterprise group and that it is entirely used to finance capital formation. Any remaining capital formation is financed internally⁹ via enterprise or household saving. Figure 41.4 presents this view of the financing of investment by the other domestic sector.

For a rough analysis, let us break our three years about in half. The rapid upward movement in capital formation up to mid-1990 can be seen to reflect the economic boom. The crude estimate of the internal funds declines during this period. The real investment growth is thus financed by borrowing, and as we have seen (and the Figure 41.4 curves show), the borrowing is from the banking system. In our view, the decision to acquire fixed capital is the origin of this demand for bank credit. What could not be financed internally was financed by borrowing from banks.

In the second half of 1990 internal financing turns up (with the Gulf War) and private credit levels off, as we saw in Figure 41.3. However, increased borrowing both from government and the rest-of-world displaces bank borrowing, and it declines sharply. We interpret this to mean that the domestic bank borrowing is here less necessary and the demand for bank credit declines. In 1991 the alternative sources of funds decline and the demand for bank credit trends upward again to fill the gap between capital formation and the rising internal finance curve. As we view the sector, it is capital formation that primarily drives the demand for borrowing.¹⁰

We may now summarize the above analysis of the saving investment process for 1989–91. The boom in real investment in 1989 and 1990 drove up the private domestic economy's capital formation faster than its growth in gross saving, with the consequence that the other domestic sector's net borrowing grew in these years. And although its capital formation growth probably tapered off in 1991, its gross saving remained at a low level so that its net borrowing continued to grow. On the other hand, the Central Government, after balanced budgets in 1989 and 1990, found itself with a substantial 1991 surplus largely due to the Gulf War, even after the rise in its own capital formation. Finally, the

boom raised the balance of payments deficit during 1990 and 1991, except for a sharp Gulf War dip in 4Q90. So the rest-of-world was a substantial net lender to Indonesia in these years. Thus our financial analysis needed to explain *how* the Central Government and the rest-of-world financed the net borrowing of the other domestic sector in these years.

Our answer was that the borrowing needed by the other domestic sector to finance its real investment was basically private credit from the banking system, the bulk of which had ultimately been obtained from the other domestic sector as it acquired currency and deposits. We referred to this pattern as standard bank intermediation. Next, this bank credit flow to the other domestic sector was supplemented by direct flows of private credit in 1990 and 1991 from the government and in 1991 from the rest-of-world. Finally, we found ways in which the banking system's private credit extension could differ from the size of its broad money issue under more complex types of intermediation.

One way was by means of bank portfolio flow shifts. The year 1990 saw a shift away from foreign claims and favoring private credit, while 1991 saw the opposite shift, away from private credit and toward foreign claims. These movements enabled rest-of-world net lending to pass to the other domestic sector through the banking system as an intermediary in 1990 and 1991. We also found the government in 1990 advancing funds to the banking system by the accumulation of government deposits. These enabled the Central Government in 1990 to advance funds to the other domestic sector indirectly through the banking system.¹¹ By these various means the flow of private credit to the other domestic sector has been able to exceed its broad money acquisition, thus financing the growing net borrowing of the other domestic sector.

We turn now to an analysis of the impact of monetary and credit stabilization policies on the saving-investment process. In general these policies operate via Bank Indonesia actions on the flow of money and quasi-money and/or private credit—two key curves in the banking sector column in Figure 41.3—and via the interest rates associated with these flows. Bank Indonesia's primary methods of control operate through the bank reserve mechanism. To observe such controls we must remove the Monetary Authorities account from the consolidated banking system and observe it separately. This is done in Figure 41.5.

Figure 41.5 presents a "factors affecting reserves" analysis. At the top are three solid curves showing flows in the major financial assets that Bank Indonesia deals in. Below these are two dashed liability curves,¹² and at the bottom a liability curve for the reserve deposits of the deposit money banks (DMBs). Roughly we can think of upward movements in this reserves curve as easing the reserve position of the DMBs, and downward movements as tightening this position. In a "factors affecting reserves" analysis, each of the upper curves is assumed to separately affect the reserves curve—an upward asset curve movement raising the reserves, and an upward liability curve movement lowering reserves. Finally, Bank Indonesia policies can affect two of the curves: (1)

claims on DMBs (liquidity credit extended to the DMBs) and (2) the BI certificates and money market securities net liability (the "open market" instruments of Bank Indonesia). The central bank moves these curves to bring about the net effect it wishes on reserves.

For Indonesia 1989 was a year of easy credit policy. In Figure 41.5 we see that the peaks in central government debt and deposits offset one another in their effect on reserves. On the other hand, the growth of liquidity credit claims on DMBs was the main force bringing about the gentle upswing in reserves.

In 1990 the policy stance shifted toward a tight credit policy. Over the course of the year a substantial reduction in liquidity credits took place. The downswings in claims on DMBs and foreign claims, net, were the major factors making for the decline in the reserves curve that we observe in the first half of 1990. Later in the year the rapid expansion in foreign claims overcame the offsetting rise in central government deposits to once again yield a gentle rise in the reserves curve. "Open market" operations were not sufficient to overcome this easing.

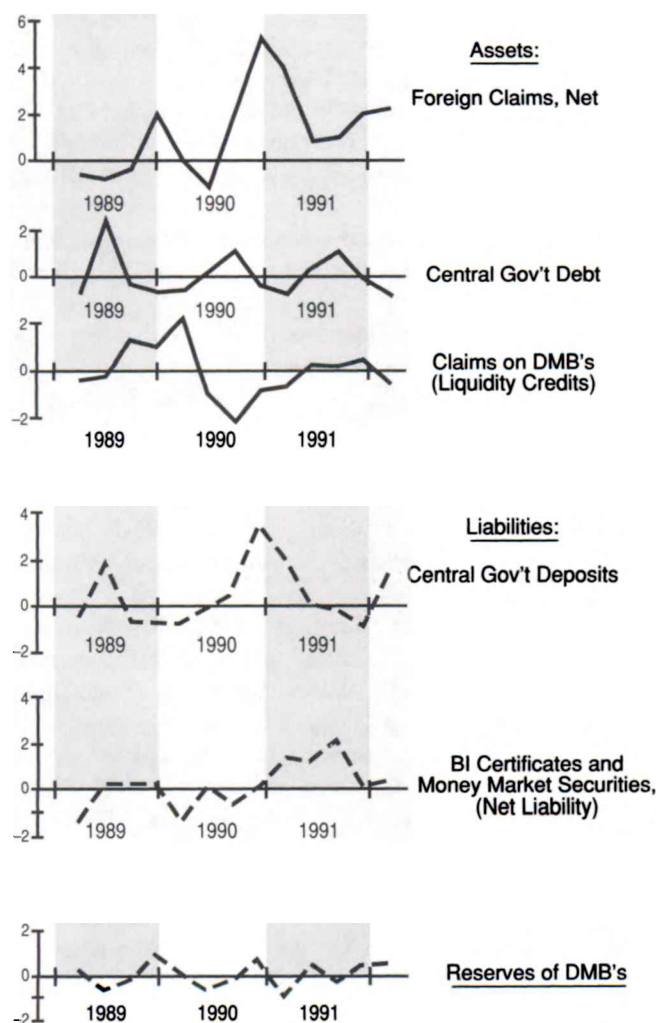
The policy stance was further tightened in 1991. In Figure 41.5 the tightening movement in foreign claims was more than offset by easing movements in both central government debt and deposits. Nevertheless, the reserves curve fell in 1Q91, and over the year grew very little. This tightening was due to Bank Indonesia's operations in BI Certificates and Money Market Securities, which curve rose until 4Q91. Finally, we may note that as we enter 1992, several of the curves move in the tightening direction, but a major change in miscellaneous liabilities (not shown) offsets this impact on reserves.

We may summarize our interpretation of Figure 41.5 by noting that a variety of offsetting movements among the factors affecting reserves—largely fortuitous—permitted Bank Indonesia to keep reserve movements modest without having to resort to large operations in its "open market" instruments. Looked at another way, "open market" operations were not having major tightening effects on reserves during the tight credit period of 1990–91.

A major problematic aspect of monetary controls operating through the reserve mechanism for Indonesia is the relation of DMB reserves to deposits. In October 1988 the required reserve ratio was reduced from 15 percent to 2 percent in the name of structural reform. Since then excess reserve assets have remained very large, often double the reserve requirement. Even in the tightest months of 1991, excess reserves were more than 60 percent of required reserves. In our view this cushion is large enough that the banking system need not respond to reserve movements of the size executed during these years. The banking system is essentially left free to respond to the market credit demands we discussed with Figure 41.3.

A second method of "escape" from tight Bank Indonesia policies appeared in 1990. The large 1990 trough in the banking system's net foreign claims curve (see Figure 41.3) is due to a surge in DMB borrowing from abroad.¹³ The

Figure 41.5 Monetary Authorities—Major Factors Affecting Reserves
(billions of rupiah)



Source: BPS Flow-of-Funds Data

transfer of the foreign exchange to Bank Indonesia kept the DMB reserves replenished. During 1991 Bank Indonesia responded with a variety of new regulations designed to restrict bank overseas borrowing, and its expansion ceased.

In early 1991 a novel additional tightening measure was undertaken. State enterprises were instructed to shift about Rp 10 trillion in bank time deposits to

Bank Indonesia certificates. The impact of this "Sumarlin shock" can be seen as the downward spike in the money and quasi-money curves in Figure 41.3. However, most of the associated reserve reduction was offset by Bank Indonesia purchases of money market securities. (We saw in Figure 41.5 that the *net* open market operation by Bank Indonesia was a sale of only some Rp 1 trillion in 1Q91). And for the banking system as a whole, although it suffered a sharp decline in its sources of funds on account of broad money, it received a corresponding increase in its sources via its large net issue of BI certificates to the state enterprises. Total intermediation through the banking system fell only moderately; total bank credit increased some Rp 6 trillion rather than the previous quarter's nine. And the event had only a once-and-for-all affect on the financial flows.

Of course, during the tight credit period of 1990–91 interest rates rose. For Indonesia this means increases in rates administered by banks, primarily on bank deposits and bank loans, rather than open-market rates reflecting financial market conditions. The process began during 2Q90 and reached a peak in 1Q91 during the "Sumarlin shock," with deposit rates rising some 3 percent or 4 percent and lending rates some 2 percent. Rates have remained at nearly these levels up to the present. Apparently Bank Indonesia had difficulty in obtaining an easing of rates after mid-1991 as conditions warranted a return to lower levels.

A summary of our consideration of monetary and credit policies during 1990–91 is now in order. We see little evidence that steps to tighten credit via the reserve mechanism in 1990–91 had a substantial restrictive effect on the banking system's monetary and credit flows. The rapid expansion in broad money leveled off in 1990, but as we saw, a portfolio flow shift permitted private credit extension to grow rapidly to finance the boom through mid-1990. The decline in private credit extension at that time was not a response to tight policy in our view but a decline in the *demand* for bank credit; private lending from the government and rest-of-world maintained the credit flow to the private economy. And during 1991 the private credit flow from banks took a lower average as the economic boom and bank credit demand eased. On the other hand, interest rates did rise over the two years, both lending rates and deposit rates. So the case for a substantial monetary policy impact rests on whether the rate increases were large enough to have substantially influenced investment and borrowing demand. We remain skeptical. It seems more likely that other forces were at work in easing the boom.

We have so far analyzed monetary and credit policy as if its primary purpose were to influence domestic aggregate demand. But the relation of such policy to the balance of payments needs to be considered. An open international capital account such as Indonesia's is subject to private capital inflows in response to large international interest rate differentials and to outflows in response to fears of devaluation. These inflows and outflows correspondingly affect the banking

system's foreign exchange reserves. For example, the tight credit policies and rising interest rates of 1990 were partly responsible for a large capital inflow in 1Q91. And as we have seen in Figure 41.5, the resulting large foreign exchange growth could have made bank reserve management difficult.

On the other hand, in the case of a speculative capital outflow with a sharp decline in foreign exchange reserve balances, Bank Indonesia might well launch a tight credit policy, using high interest rates to attract capital to help stem the outflow. Such a policy would be seen as necessary even if it were in conflict with appropriate domestic policy. Even foreign exchange losses due to a rising current account deficit might well induce a tight credit policy. In other words, the policy objective of maintaining adequate foreign exchange balances is of such overwhelming importance for Indonesia that monetary policy will be set with due attention to foreign exchange reserve movements, the balance of payments current account, and international interest rate differentials.

Notes

1. See *Flow-of-Funds Data for Indonesia, 1988-92 (Preliminary Data)* (Jakarta: Biro Pusat Statistik, August 1992). These data were presented at a flow-of-funds users' seminar at Bank Indonesia on August 20, 1992. All the charts in this paper use these data as their source.

2. In Figure 41.1 preliminary capital formation and national saving figures for 4Q91 and 1Q92 have been replaced by later revised data.

3. Since the banking sector's net lending is small, this curve is omitted.

4. No curves are shown for miscellaneous and discrepancy sources, net.

5. Unfortunately, the omitted liability curve—miscellaneous and discrepancy sources—is in this case a rather unstable curve.

6. For Indonesia, where other than seasonal borrowing by the government from the banking system is strongly discouraged, central government deposits may cushion government surpluses or deficits. For example, we noted the deposit accumulation in 1990 as the government budget went into surplus.

7. An added factor in 2Q90 helping permit the credit expansion is the growth in central government deposits.

8. An additional factor was the expansion of government during 1990 deposits.

9. "Internally" in this context means financed by operating surpluses within the enterprise.

10. Two other forces are also probably at work: borrowing for working capital purposes, and borrowing to finance imports.

11. We should also mention that the banking system usually has miscellaneous and discrepancy sources of funds that can finance credit extension without currency and deposit expansion.

12. Money market securities assets are here netted against Bank Indonesia certificate liabilities to yield a single net liability flow. Also, two liability curves are omitted from Figure 41.5: money (M1) issue (which in these years is small and stable), and miscellaneous and discrepancy sources, net.

13. These DMB liabilities are netted against DMB foreign assets to yield negative net claims figures for DMB.

JOHN C. DAWSON

A Financial Policy Brief: Indonesia

(1994)

The 1993 Background

The Indonesian economy remained strong in 1993, the GDP growing some 14 percent over the year, about the same as in 1992. Although the economy was easing as 1993 began, it strengthened as the year progressed. During the first and second quarters the economy was export-driven, but as the growth of export demand weakened in the third and fourth quarters, it was fully replaced by growth in domestic demand, both private consumption and capital formation. In fact, the second-half 1993 rise in aggregate demand created a "miniboom."

This second-half miniboom showed itself clearly in the rising path of private sector fixed capital formation, which created a substantial increase in the sector's need for financing. In the second quarter of 1993 private bank borrowing increased very sharply, by some 10.¹ And the new high level of bank borrowing continued throughout the year. The miniboom was financed by increased bank credit to the private sector.

A second major force affecting the Indonesian financial system is the balance of payments. In 1993 its increased volatility became a problem. In the first three quarters the deficit showed signs of returning to earlier higher levels. At the same time, the inflow of private capital was down. The result was a loss of some 5 in foreign exchange reserves during the second and third quarters. Then a fourth-quarter spurt in exports drove the current account into surplus. Together with added capital inflows, which were aided by tight credit policies, the surplus led to major growth in reserves once again. These large swings in foreign exchange balances forced the monetary authorities into vigorous efforts to stabilize the reserves of the banking system as we note below.

Reprinted, with permission, from John C. Dawson, "Financial Policy Brief, Second Quarter, 1994," (presentation at a flow-of-funds users' seminar, Central Bureau of Statistics, Jakarta, July 1994).

With respect to fiscal policy, its management success continued in 1993. The current budget surplus (domestic revenue less current expenditure) grew by some 3, resulting in an overall budget surplus of some 3, more than meeting the objective of a balanced budget. In addition, foreign borrowing remained small. It may be pointed out, however, that the seasonal movements in government fixed capital formation are large and create a destabilizing component of aggregate demand.

The Monetary Authorities began 1993 with an easy policy, matching the easing of aggregate demand. By midyear, however, not only was aggregate demand rising strongly with the miniboom, but also Bank Indonesia was rapidly losing foreign exchange reserves. So the stance shifted to a tight policy in July/August. It is hoped, of course, that the rates set on Bank Indonesia certificates will push up the structure of bank deposit and lending rates, but in this case both these structures continued on their downward trends.

After November, when foreign exchange reserves were once again rising rapidly, the certificate rate was allowed to decline again. It is not possible to know how much the rise in short-term interest rates helps to protect the foreign exchange reserve by attracting capital. We judge the reserve movements to result primarily from balance of payments developments, especially in the current account deficit.

Monetary policy is not actively exercised on the bank reserve mechanism. Bank Indonesia's policy there is the defensive one of preventing foreign exchange movements and other shifts in factors affecting reserves from altering the reserve total. In 1993 Bank Indonesia, by vigorously pursuing certificate issues (first quarter), then retirements (second quarter), then issues once again (fourth quarter), was able to keep bank reserves stable and just slightly growing. Bank Indonesia is now very skilled in this type of reserve management.

However, the Indonesian banking system has sufficient excess reserves that it is able to expand even when, as is the case, its reserves are kept constant. During 1993 the total of broad money (money plus quasi-money) grew 22 percent compared with 20 percent for 1992. This could be judged a reasonable increase, apparently showing an effective tight credit stance in the face of rising aggregate demand.

Nevertheless, the banking system was able to accommodate the miniboom in capital formation by a massive increase in private credit. Over the year, credit to the private sector rose 23 percent, compared to 13 percent in 1992. The banking system is able to do this partly by means of portfolio offsets. In the second and third quarters of 1993 the declines in foreign exchange reserves (i.e., net foreign claims) offset the growth of private credit in the banking system's portfolio to preserve a reasonable overall expansion of the system. Or, when no offset is available, the system is free to expand total credit. And in the fourth quarter of 1993 this was done without greatly increasing the growth rate of the system for 1993 as a whole. The ability of the banking system to finance a boom in these ways remains a problem for monetary management.

We have not so far mentioned the problem of inflation. We see inflation as a modest problem for Indonesia; inflation has varied slowly, between 6 percent

and 10 percent, for the past five years. But more importantly, to the extent that we understand the causes of recent inflation in Indonesia, these causes lie very distant from aggregate demand and its stabilization. The causes consist primarily of supply-side problems related to crop production, changes in administered prices and wages set by government, and the policy of gradual depreciation of the rupiah. Thus the policies needed to manage inflation are not those of general monetary and fiscal policy.

Developments in the First Quarter of 1994

As the economy entered 1994 there were some signs of a modest weakening in aggregate demand. The GDP growth rate fell back somewhat. Export growth rates seemed to be tapering. And fixed capital formation leveled off. Despite some conflicting indications, the economy was easing.

With the private sector's capital formation leveling off and with business saving probably on the rise, the private sector's need for borrowing dropped sharply. Credit extension from the banking system dropped from 11 in the fourth quarter of 1993 to 4 in the first quarter of 1994. Looking at bank finance, we might judge the miniboom to have come to an end. But it is often the case that borrowing is especially needed at the start of an upswing, borrowing that can later be replaced by business saving as profits and incomes rise.

Meanwhile, there was a sharp shift back to a deficit in the balance of payments current account. As export growth had tapered, that of imports—which had lagged in 1993—had grown. However, foreign exchange reserves did not decline. Both government and private capital inflows increased to partially offset the effect of the deficit on reserve balances.

Bank Indonesia's policy stance was somewhat eased during most of the first quarter, judging by Bank Indonesia certificate rates. This may well have been a response to the favorable foreign exchange reserve situation. With respect to bank reserve management, many of the factors affecting bank reserves were forcing them downward. So the stabilization action called for was a major easing action, a major retirement in Bank Indonesia's previously issued certificates. This provided a welcome reduction in an expensive Bank Indonesia liability.

A Projection for the Second Quarter of 1994

The key question posed as the Indonesian economy approaches the midyear is: Will the boom continue? The answer of our projection is: Yes, but in somewhat eased form. We expect aggregate demand (including fixed capital formation) to keep growing about on the scale of 1993. However, the second quarter is in some ways a seasonal lull in the economy, so our picture must take this into account.

The first aspect of the seasonal lull concerns fiscal policy. The current budget surplus declines seasonally in the second quarter and is accompanied by a decline in government fixed capital formation. This decline of perhaps 4 will be

enough to make fixed capital formation for the whole economy turn seasonally downward in the second quarter.

The second aspect of the lull is a decline in the balance of payments current account deficit stemming from seasonally strong exports. When combined with the steady inflow of capital, the upshot is a small rise in foreign exchange reserves. So the balance of payments situation will remain favorable (seasonally) during the second quarter.

On the other hand, the private sector will be maintaining the strength of fixed capital formation with an increase of 2 in its investment. Despite some increase in business saving we expect an increase by this sector in its demand for funds from banks. The banking system will accommodate and increase private credit extension by 1 or 2.

Our projection indicates little need for a tight credit policy during the second quarter of 1994. Since we do not foresee declines in foreign exchange reserves, Bank Indonesia can focus on the domestic scene. Considering the banking system, a moderate increase in credit extension of perhaps 5 is expected. But the resulting credit flow remains moderate, since it is starting from the small levels of the first quarter. Total bank credit is projected to increase only 21 percent. Finally, reserve management will continue to require retirement of Bank Indonesia certificates, as in the first quarter. So our picture of this second quarter of seasonal lull presents no stress with respect to monetary policy. But Bank Indonesia may prudently wish to retain a moderately tight stance in view of the coming quarters if we are correct about the continuation over the year of strong aggregate demand.

The Outlook for the Third and Fourth Quarters of 1994

We do not have a detailed projection for the rest of 1994, so our outlook will be both short and highly qualitative.

First, the seasonal lull will end. Central government fixed capital formation will rise substantially over the next two quarters. Second, the balance of payments deficit—with rising imports and slowing exports—will rise to the level of recent years and perhaps beyond. Foreign exchange reserves will thus be more difficult to maintain.

We expect aggregate demand to remain evenly strong, including that for fixed capital. Both government and private fixed capital formation will move upward. And we expect further increases in the private demand for bank credit.

The implications of all this for monetary policy are that it would need to tighten. Bank reserve management may be more difficult, and banking system expansion may well increase.

Note

1. All flows cited will be in trillions of rupiah.

BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM

**Monetary Policy Report to
the U.S. Congress**

(1994)

Monetary Policy and the Economic Outlook

The year 1993 turned out to be a favorable one for the U.S. economy, with notable gains in real output, declines in joblessness, and a further small drop in the rate of inflation. Financial conditions conducive to growth prevailed throughout 1993 and gave considerable impetus to activity. With the Federal Reserve keeping reserve market pressures unchanged, short-term interest rates held steady during the year at unusually low levels, especially when measured relative to inflation or inflation expectations. In addition, long-term rates declined further, partly in response to actions taken by the Congress and the administration to put the federal deficit on a more favorable trend.

Against this backdrop, households and businesses were able to take further steps to reduce the burden of servicing debt, and more expansive attitudes toward spending and the use of credit seemed to take hold. Spending in the interest-sensitive sectors of the economy surged ahead, with particularly large advances in residential investment, business outlays for fixed capital, and consumer durables. The growth of real GDP picked up sharply in the second half, and the increases for all of 1993 cumulated to about 2.75 percent according to initial estimates. In the labor market, employment moved up at a moderate pace, and the unemployment rate dropped almost a percentage point over the year. As measured by the

Excerpted from Board of Governors of the Federal Reserve System, *Monetary Policy Report to the Congress, February 22, 1994* (Washington, DC: Board of Governors of the Federal Reserve System, 1994), 1–2, 21–27.

consumer price index, the rate of inflation edged lower last year, as unfavorable reports in the first few months of 1993 gave way to more subdued readings thereafter. The performance of the U.S. economy stood in sharp contrast to the continued sluggish growth in many of the other industrial countries and helped to buoy the trade-weighted value of the dollar on foreign exchange markets.

In conducting policy through 1993, the Federal Open Market Committee recognized that it was maintaining a very accommodative stance in reserve markets. Reserve conditions had been eased to this degree over the prior four years to counter the effect of some unusual factors restraining aggregate demand. The Committee recognized that, as these forces abated, short-term interest rates would likely have to rise to forestall inflationary pressures that would eventually undermine the expansion.

Toward the end of 1993 and into early 1994, incoming data on the economy and credit flows have increasingly conveyed a picture of considerable underlying strength. The marked speedup of growth in the economy has been reducing spare capacity, as is evident in the recent declines in unemployment and increases in capacity utilization rates in industry. Moreover, while movements in broadly based price indexes have remained relatively favorable, there also have been undercurrents suggesting that the process of disinflation might be stalling out. In particular, after slowing considerably in 1992, nominal increases in hourly compensation—comprising wages and benefits—fell no further in 1993, and long-term inflation expectations remain stubbornly above recent inflation rates. Also, commodity prices generally have firmed in recent months.

Earlier this month, the Federal Reserve concluded that the weight of the evidence indicated that undiminished monetary stimulus posed the threat that capacity pressures would build in the foreseeable future to the point where imbalances would develop and inflation would begin to pick up. At its February 1994 meeting, the Federal Open Market Committee determined that it was time to move to a slightly less accommodative stance. While the discount rate remained at 3 percent, the federal funds rate edged up to trade at about 3.25 percent, a little above the prevailing rate of inflation.

Strength in spending last year was supported by increased borrowing by both households and businesses. Continuing declines in a number of interest rates, which sparked considerable refinancing of existing obligations, helped to trim debt service burdens for both sectors, undoubtedly facilitating the pickup in borrowing and spending. Indicators of financial stress, including loan default rates and bankruptcy filings, took a decided turn for the better in 1993. Borrowing by households was robust enough to raise the ratio of debt to disposable income; business debt, held down in part by equity issuance, declined relative to income. The debt of all nonfinancial sectors is estimated to have grown about 5 percent last year, the same as in 1992, as a diminution in the net funding needs of the federal government was about offset by the pickup in private demands. This growth placed the debt aggregate in the lower half of its 4 to 8 percent monitoring range.

Table 43.1

Ranges for Growth of Monetary and Debt Aggregates¹ (percent)

Aggregate	1992	1993	1994
M2	2 1/2 - 6 1/2	1-5	1-5
M3	1-5	0-4	0-4
Debt ²	4 1/2 - 8 1/2	4-8	4-8

1. Change from average for fourth quarter of preceding year to average for fourth quarter of year indicated. Ranges for monetary aggregates are targets; range for debt is a monitoring range.

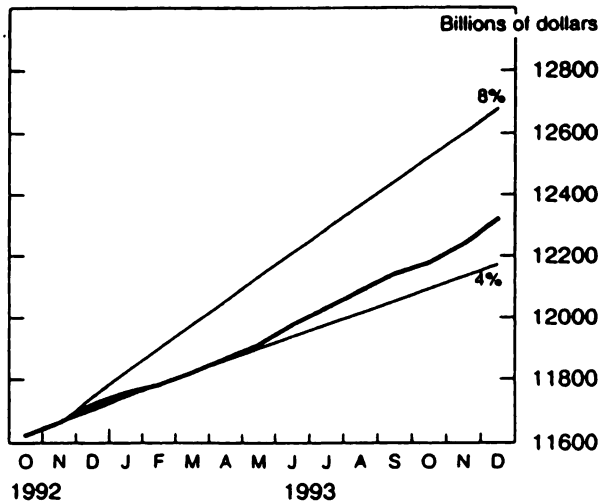
2. Domestic nonfinancial sector.

The growth of M2 slowed in 1993, albeit considerably less than the deceleration in nominal GDP. For the year, M2 advanced 1.5 percent, placing it a little above the lower bound of its 1 to 5 percent annual growth cone. M3 expanded 0.5 percent, the same pace as in 1992, and a bit above the lower bound of its 0 to 4 percent annual range. The ranges had been adjusted down by the Federal Open Market Committee during 1993. The adjustments were technical in nature and reflected the Committee's judgment as to the extent of the ongoing distortions of financial flows relative to historical patterns, and of consequent increases in velocities—that is, the ratios of nominal GDP to money.

The special factors shaping the growth of the monetary aggregates included a marked preference by borrowers for capital market financing, rather than bank loans, and a configuration of market returns that enticed investors away from the traditional financial products offered by depositories. Bond and stock mutual funds were the primary beneficiaries of this shift, with inflows into such funds in 1993 setting a new record. This continuing redirection of credit flows has rendered the movements of the broad monetary aggregates less representative of the pace of nominal spending than was evident in the longer historical record. In 1993, nominal GDP grew a shade more than 5 percent, or 3.75 percentage points above the rate of expansion of M2 and 4.5 percentage points above that of M3.

Most of the increase in the broad aggregates was recorded in their M1 component, which grew 10.5 percent in 1993 as low money market and deposit interest rates provided little reason to forgo the liquidity of transaction deposits. At times during the year, declines in longer-term market rates produced waves of mortgage refinancing, an activity that is associated with temporary flows through the transaction deposits that are counted in M1. In addition, the currency component expanded at about the same rate as the M1 total, spurred by considerable de-

Figure 43.1 Debt: Annual Monitoring Range and Actual Growth
(billions of dollars)



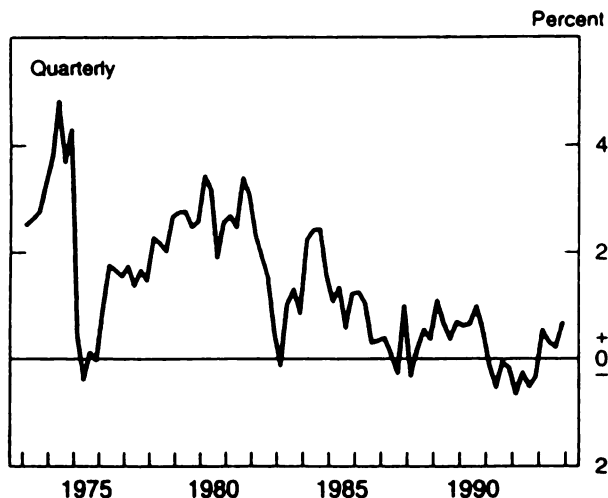
mands from abroad. The double-digit expansion in M1 deposits pushed reserves up at a 12.5 percent rate in 1993, while the monetary base, which includes reserves and currency, increased 10.5 percent, the same rate that was posted in the previous year.

...

Money and Credit Flows

The long expansion of the 1980s was associated with growth of total debt of domestic nonfinancial sectors, which was about 1.5 times the pace of nominal GDP growth. In the wake of this phenomenal leveraging, the recession and tepid economic recovery from 1990 to 1992 were importantly a balance sheet phenomenon that was reflected in a slowing in debt growth. In retrospect, it is apparent that this deceleration in debt was one symptom of the general dissatisfaction of both borrowers and lenders with their financial conditions, a concern that also led to some restraint on spending and asset accumulation. The year 1993 saw some lessening of this restraint, and the growth of the debt of the nonfinancial sectors expanded 5 percent, about in line with nominal GDP. This performance put the debt aggregate in the lower portion of its 4 to 8 percent monitoring range, a range that had been set at the first meeting of the year.

The debt of the nonfederal sectors (nonfinancial businesses, households, and state and local governments) expanded 3.75 percent last year. For nonfinancial corporations, a pickup in fixed investment and inventory investment outpaced increases in internally generated funds, pushing the financing gap into positive territory after two years of negative readings; as those firms sought outside funds, they turned in the main to long-term debt markets, but net equity issuance

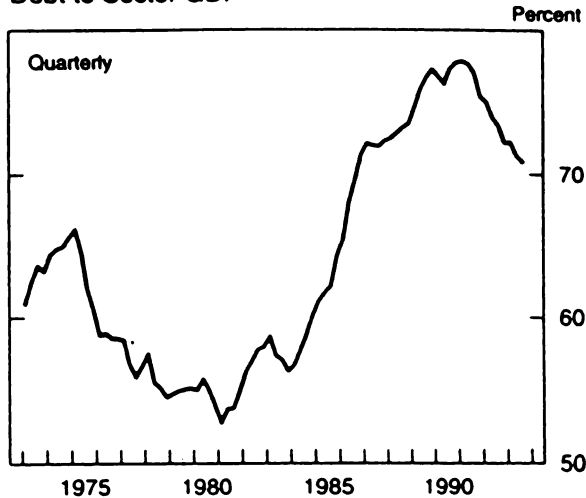
Figure 43.2 Nonfinancial Corporate Financing Gap as a Percent of Total GDP

remained sizable as well. However, the debt markets in 1993 saw far more activity than the net requirements for external funds implied. Low longer-term rates induced many firms to refinance existing obligations, pushing gross public debt issuance by nonfinancial firms above \$190 billion.

Earlier efforts to restructure balance sheets, along with the opportunities afforded by lower long-term rates to refinance existing obligations, apparently put households in a better position to take on new debt in 1993. With debt-service burdens holding at about 16 percent of income, or about 2.25 percentage points below the peak set at the end of the previous decade, and loan rates declining substantially, households assumed new liabilities rapidly enough, on net, to push up the ratio of their total liabilities to disposable income to just under 90 percent in 1993. The largest swing was in the consumer credit category, as households evidently became more confident of the sustainability of the economic expansion and made previously delayed purchases of durable goods, especially autos. The record volume of mortgage originations mostly involved refinancings, but with a pickup in construction activity and some cashing out of equity in the process of refinancing, home mortgages expanded 7 percent, on net, last year. Overall, this pickup in liabilities was dwarfed by a substantial expansion of the asset side of the household balance sheet last year, raising net worth to a level about 4.75 times that of disposable income. Within those assets, households continued to shun deposits in favor of the investment products of nonbank intermediaries, notably mutual funds and insurance companies. As a result, deposits shrank to under 20 percent of total household assets, a post-World War II low. Much of the declining role for deposits was probably due to the pattern of financial returns, with investors, confronted by a steep yield curve, seeking out the higher yields

Figure 43.3 Indicators of Nonfarm Nonfinancial Corporate Sector Finances—Debt to Sector GDP, Debt Service to Sector GDP

Debt to Sector GDP

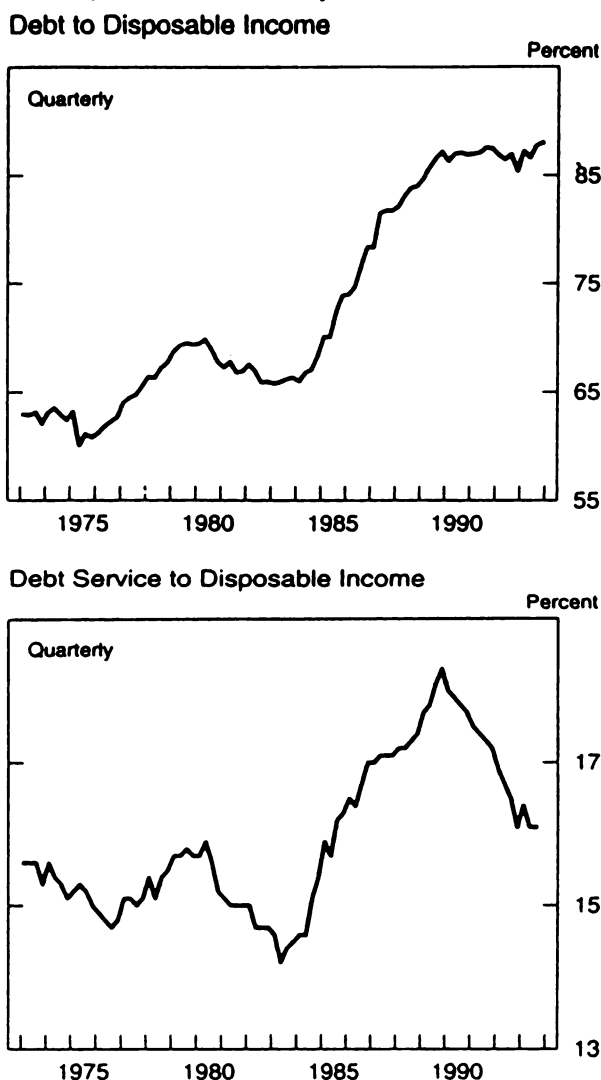


Debt Service to Sector GDP

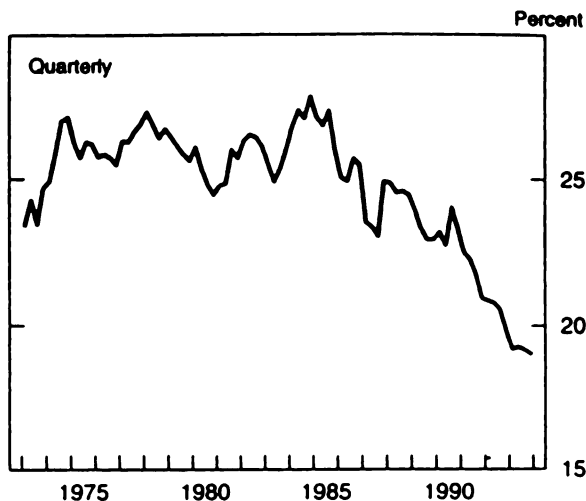


provided by longer-maturity instruments that were mostly available from outside the depository sector.

Depository institutions, pressed by their own balance-sheet problems, were unaggressive in seeking deposits and extending credit in the early 1990s. But by 1993, commercial banks had made substantial strides in improving their capital standing. About three-quarters of the assets at commercial banks were on the books of well-capitalized institutions as of September 1993, 2.5 times the pro-

Figure 43.4 Indicators of Household Sector Finances—Debt to Disposable Income, Debt Service to Disposable Income

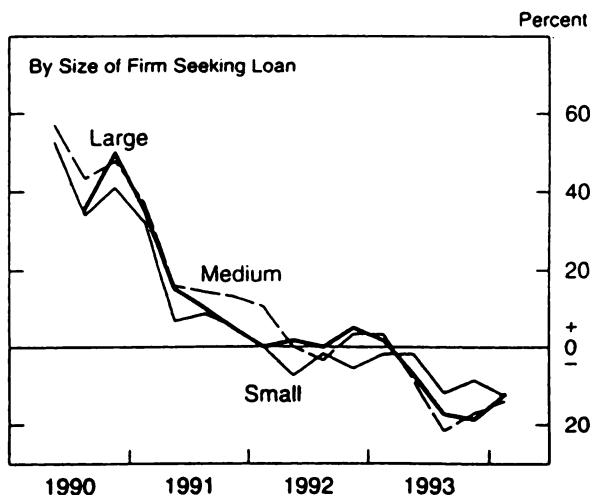
portion at the end of 1990. Partly as a consequence, banks reported on Federal Reserve surveys a substantial easing of terms and standards on business and consumer loans during the year. However, borrowers, endeavoring to lock in longer-term funds, which typically are not supplied by banks, continued to rely heavily on capital markets, keeping the need of depositories to fund asset expansion subdued. Depository credit did expand modestly in 1993, marking a substantial rebound from the declines posted in the previous three years. The

Figure 43.5 Household Deposits as a Percent of Household Assets

increase in depository credit exceeded the growth of deposit funds as depositories made extensive use of equity, subordinated debt, and other nondeposit funds to finance the expansion of depository balance sheets. Bank credit increased 5 percent last year, after two years of growth in the neighborhood of 3.5 percent, while thrift credit contracted only modestly. Indeed, thrift credit is estimated to have expanded in the second half of the year, pulled up by extensions of loans by credit unions that outweighed continuing, albeit slackening, runoffs at savings and loans.

Slow expansion of depository credit, together with the increased reliance by banks on nondeposit funds, damped the growth of M3 in 1993. From the fourth quarter of 1992 to the fourth quarter of 1993, M3 grew 0.5 percent, ending the year a little above the lower bound of its annual range of 0 to 4 percent. This range had been adjusted down for technical reasons to acknowledge the appreciable upward trend to M3 velocity over the past few years, which accompanied the shrinking role of depositories in intermediating funds. The part of M3 exclusive to that aggregate declined 3.5 percent on a fourth-quarter to fourth-quarter basis, held down by a steep drop in institution-only money market mutual funds. Overall, M3 velocity rose at a 4.5 percent annual rate in 1993, down almost 2 percentage points from the previous year.

The velocity of M2 rose at a 3.75 percent annual rate in 1993 after increasing nearly 5 percent in 1992. The rise in velocity last year was posted even as the return on many competing short-term assets remained relatively constant, and it was this ongoing drift upward in the ratio between nominal GDP and the aggregate that led the FOMC to reduce the annual growth range for M2 from the 2 to 6 percent spread that was set in February to the 1 to 5 percent range that was

Figure 43.6 Net Percentage of Domestic Loan Officers Reporting Tightening Standards for Commercial and Industrial Loans

ultimately in effect. In the event, M2 grew 1.5 percent from the fourth quarter of 1992 to the fourth quarter of 1993, slowing slightly from the 2 percent growth rate in 1992. Even this anemic expansion was accounted for in part by special factors. In particular, foreign demands for currency were strong and transactions deposits were boosted late in the year by a surge in mortgage refinancings that followed when mortgage rates fell to levels not seen in a generation. Refinancings are associated with the temporary parking of funds in transactions and other highly liquid deposit accounts.

Especially after taking account of such special factors, the growth of M2 was quite subdued in 1993, owing in large part to the attractiveness of capital market instruments. Although the bond market rally trimmed as much as 1 percentage point from longer-term yields, the term structure still retained an abnormally steep tilt through all of 1993. Some investors were willing to expose themselves to the greater price risk inherent in capital market mutual funds in the pursuit of higher average returns. Commercial banks took some measures to keep those customers, if not those deposits: Many banks made it possible to buy stock and bond mutual funds in their lobbies. Promotion of these services picked up, and some banks sponsored their own mutual funds or established exclusive marketing arrangements with mutual fund companies, undoubtedly encouraging the diversion of deposits to mutual funds.

At the end of 1993, assets in stock and bond mutual funds totaled about \$1.5 trillion, up \$400 billion from year end 1992. About half of the December 1993 total was held by institutions and in retirement accounts—two categories gener-

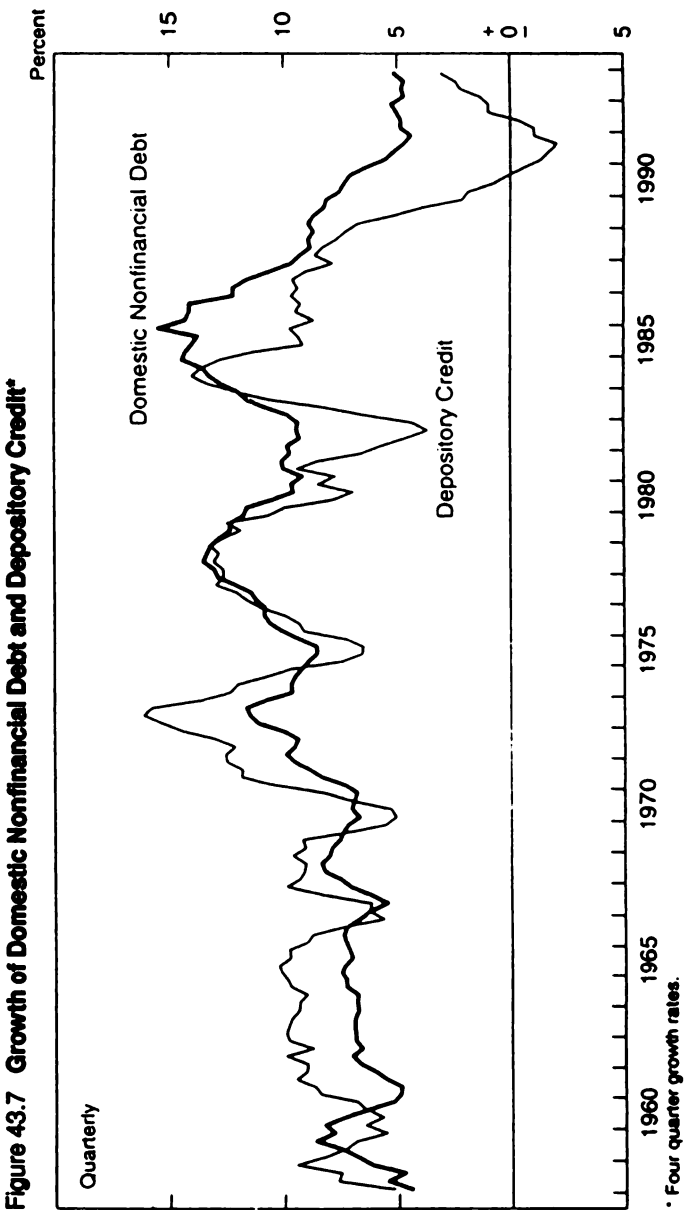
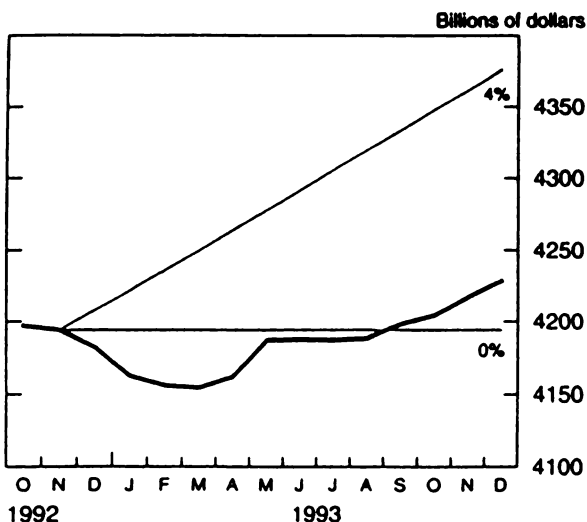


Table 43.2

Assets of Domestic Banks, by Capital Category, Adjusted for Overall Supervisory Ratings, as a Proportion of All Such Assets (percent)¹

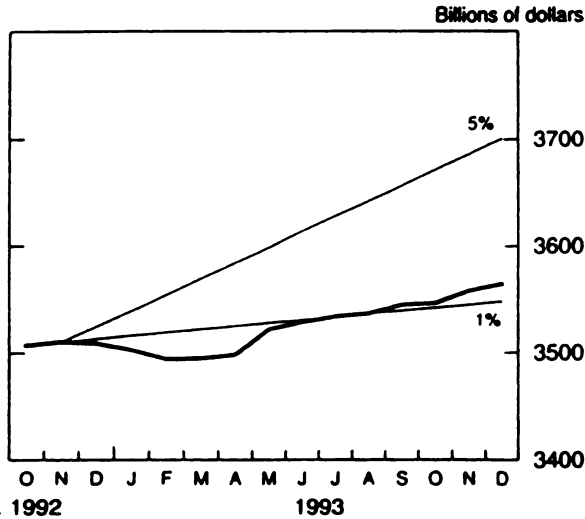
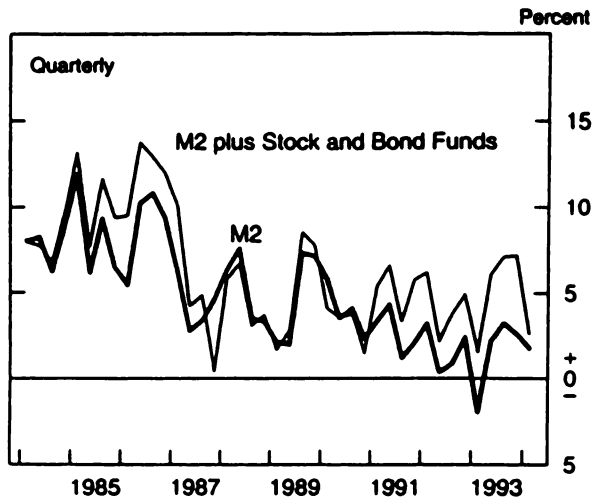
Category	Year-end			September 1993
	1990	1991	1992	
Well capitalized	30.4	34.4	67.8	73.3
Adequately capitalized	38.5	45.1	21.8	17.8
Undercapitalized	31.1	20.5	10.3	8.9

1. Adjustments to capital categories were made according to the rule of thumb of downgrading a bank by one category for a low examination rating by its supervisory agency (CAMEL, 3, 4, or 5).

Figure 43.8 M3: Annual Range and Actual Growth

ally not in M2. M2 plus the remainder of stock and bond funds expanded at about a 5.5 percent annual rate in 1993, roughly in line with nominal GDP over that period.

M1 grew at a 10.5 percent pace last year, spurred on by double-digit increases in currency and demand deposits. As noted above, the former was importantly boosted by foreign demands, while the latter was closely related to swings in mortgage refinancing. M1 velocity declined at a 4.75 percent annual rate, despite

Figure 43.9 M2: Annual Range and Actual Growth**Figure 43.10 Growth Rates of M2 and M2 Plus Stock and Bond Funds**

the relative stability of money market interest rates. In contrast, the narrow aggregate's velocity had followed the path of short rates down during the easing of monetary policy from 1989 to 1992. Together, the drop in M1 velocity in recent years illustrates both its high interest-rate sensitivity and the fairly loose relationship of M1 with interest rates and income. With the rapid expansion of transactions deposits, total reserves grew at a 12.25 percent annual rate last year,

Figure 43.11 M1: Actual Growth

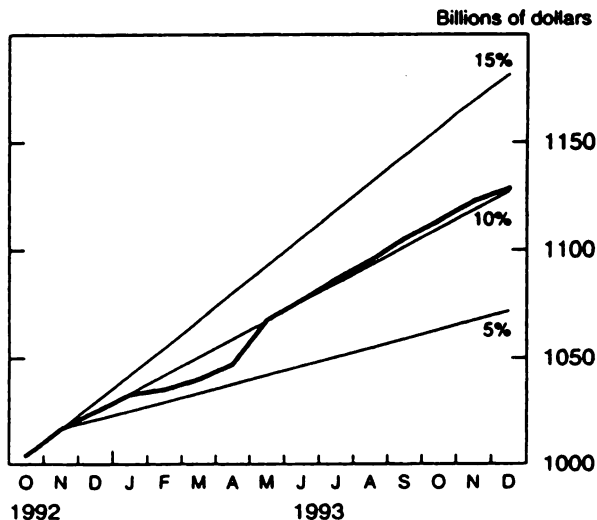
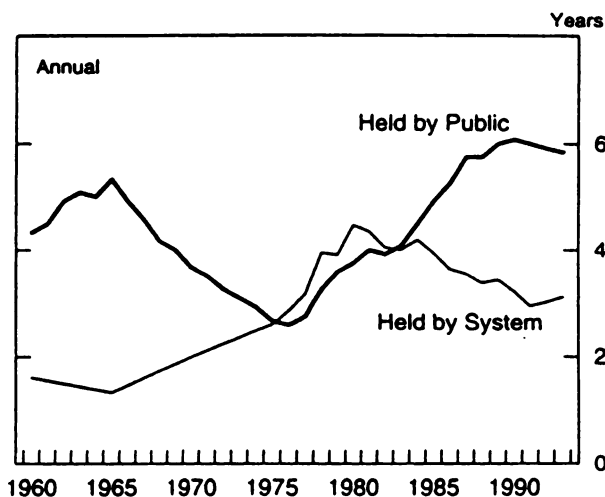


Figure 43.12 Average Maturity of Treasury Debt



down from the 20 percent pace posted in 1992. Adding the increase in currency results in a 10.5 percent growth rate for the monetary base in 1993, the same performance as the previous year.

Confronted with this rapid expansion in transaction deposits, and therefore required reserves, and directed by the FOMC to keep reserve market pressures unchanged over all of 1993, the domestic desk at the Federal Reserve Bank of

New York added about \$35 billion of securities, on net, to the system open market account over the course of the year. In keeping with previous FOMC instructions, those purchases were weighted more heavily than in the past toward longer-maturity instruments. As a result, the average maturity of the Treasury securities held by the Federal Reserve moved up slightly over 1993, to 3.2 years.

Table 43.3

Growth of Money and Debt (percent)

Period	M1	M2	M3	Domestic nonfinancial debt
<i>Annual, fourth quarter to fourth quarter¹</i>				
1980	7.4	8.9	9.6	9.1
1981 ²	5.4 (2.5)	9.3	12.4	9.9
1982	8.8	9.2	9.9	9.6
1983	10.4	12.2	9.9	12.0
1984	5.5	8.1	10.9	14.0
1985	12.0	8.7	7.6	14.2
1986	15.5	9.3	8.9	13.4
1987	6.3	4.3	5.7	10.3
1988	4.3	5.3	6.3	9.0
1989	.6	4.8	3.8	7.8
1990	4.2	4.0	1.7	6.6
1991	7.9	2.9	1.2	4.6
1992	14.3	1.9	.5	5.0
1993	10.5	1.4	.6	4.9
<i>Quarter (annual rate)³</i>				
1993:Q1	8.3	-1.3	-3.2	4.0
Q2	10.7	2.2	2.1	4.5
Q3	12.0	2.6	1.1	5.7
Q4	9.4	2.1	2.4	5.2

1. From average for fourth quarter of preceding year to average for quarter of year indicated.

2. M1 adjusted for shift to NOW accounts in 1981.

3. From average for preceding quarter to average for quarter indicated.

JOHN A. HOLSEN

The Medium-Term Outlook for Kazakhstan's Economy

(1995)

Introduction

1. With the breakup of the Soviet Union, the collapse of the old economic order has brought confusion and hardship to the Kazakhstan economy. During the 1990–93 period Kazakhstan suffered a 30 percent drop in total production. At the same time, inflation grew rapidly, rising to some 2,000 percent per year in 1993. In addition, upon the establishment of independence in 1992, Kazakhstan instituted a series of major reforms aimed at a rapid transition to a free market economy. The reforms involve eliminating state control of prices and trade, and the privatization of the enterprise sector.

2. Those who now design and implement economic policies in Kazakhstan face the difficult task of simultaneously trying to accomplish four broad economic objectives. These are: (1) halting the decline in economic output and restoring economic growth, (2) bringing inflation under control, (3) implementing structural and institutional reforms to continue the transition to a market-oriented economy that is more closely integrated into the world economy, and (4) providing an adequate social safety net during the transition period. In the longer run, certainly, progress in any one of these areas will make it easier to succeed in the others. But in the shorter run, conflicting demands make policy trade-offs necessary, especially in making budgetary decisions.

Condensed, with permission, from John A. Holsen, "The Medium-Term Outlook for Kazakhstan's Economy," prepared for *Kazakhstan Economic Report*, vol. II, annex 5 (Washington, DC: The World Bank, July 1995). The views expressed are those of the author and do not necessarily reflect the views or policies of The World Bank and its affiliated organizations. "Appendix A: The Flow-of-Funds Accounting Framework" has been provided by the author.

3. This report outlines a medium-term (1994–97) macroeconomic framework for Kazakhstan. Taking into account multiple objectives and policy trade-offs, the framework outlines a pattern of development that could be both feasible and desirable. The specific estimates, however, should not be taken as either forecasts of what will happen or targets for what should happen. Instead, they are best understood as approximate midpoints of ranges for the basic economic magnitudes—if the indicated assumptions and exogenous conditions are realized. But an important feature of the analytical framework used is that it lends itself to the analysis of alternative policies and differing external circumstances.

Outlook for Production, Prices, and Employment

4. The macroeconomic framework is premised on several basic assumptions. First, the recovery of the Kazakh economy will take some time. In regard to production, the best that can be expected over the next few years is to halt production declines. The projection assumes a “bottoming out” of real output in the 1994–96 period, with a recovery not taking place until 1997. This scenario is strongly influenced by the need for industrial restructuring in the light of the declines in trade with other republics of the Former Soviet Union and the changes in relative prices as subsidies are reduced and the Kazakh economy becomes more closely integrated with the world economy.

5. At the end of 1993 open unemployment was estimated at only 1 percent of the labor force. But many workers were furloughed and many enterprises were overmanned. Given enterprise reforms, the potential for labor shedding over the next few years is very high. The macroeconomic framework assumes that open unemployment will rise to 12 percent by 1997. Some system of compensation for the unemployed will clearly be necessary.

6. The problem of inflation—given its close association with monetary and credit expansion—seems capable of a more rapid solution. Here the projection sets a more optimistic target: reducing monthly inflation rates to no more than 7 percent in December 1994, 5 percent in December 1995, 3 percent in December 1996, and 1 percent in December 1997. Such targets carry substantial implications for the monetary system as well as the behavior of households and enterprises.

Trends in the Monetary Sector Account

7. The rate at which it will be feasible to bring monetary expansion—and hence inflation—under control depends heavily on the principal asset accounts in the monetary survey. Table 44.1 provides the projected balance sheet for the monetary sector, including the central bank (National Bank of Kazakhstan or NBK) and the commercial banks. The projected data show about as rapid a reduction in monetary expansion as seems consistent with credible values for the main asset

accounts if balanced attention is to be given to the full range of economic policy objectives. In addition, the factor linking monetary expansion with the rate of inflation—the monetary velocity—will be considered.

8. Increases in *net international foreign exchange reserves* (including gold from domestic sources) are projected to average about US \$160 million in 1994–95, but the average increase rises to US \$445 million in 1996–97, or about 1.5 percent of the GDP (see Table 44.1). While it is clearly desirable for Kazakhstan to build up its international reserves, the projected increases in foreign exchange reserves, particularly in 1996 and 1997, may preempt a larger share of the limited expansion in monetary system assets than is consistent with the targets for bringing inflation under control.

9. Regarding *banking system financing of the budget deficit*, in the accompanying projection, monetary system financing for the consolidated budget is held to 1.0 percent of the GDP throughout the 1994–97 period. The case for this ceiling rests on a judgment as to the desirable balance among raising taxes, cutting expenditures, and the various possibilities for deficit financing that will be considered below.

10. *Credit to the "rest of the economy" (ROE)* consists of credit to industrial, commercial, and agricultural enterprises. As measured by the credit/GDP ratio, credit to the ROE would continue to decline from 12.4 percent of the GDP at the end of 1993 to 8.6 percent of the GDP at the end of 1997 (see Table 44.1). A substantial decline in this ratio seems an almost unavoidable part of reining in monetary expansion. Such a tight credit program would doubtless put heavy pressure on the cash flow position of enterprises. While the positive side of this is that it tends to force the issue of shedding redundant labor and undertaking restructuring, the negative side is that it may leave potentially viable enterprises either without means to survive while they are putting restructuring plans together, or without the financial means to implement their plans once they have been formulated. Given the limits on lending by banks, supplementary financial support for enterprise restructuring should be available through the budget, with access to this "safety net" for enterprises strictly conditional upon preparation and implementation of enterprise restructuring programs that will eliminate the need for continued subsidies.

11. As the inflation has proceeded, the *ratio of money to GDP* (including both banknotes and deposit money) has fallen sharply, and was little more than 5 percent at the end of 1993. An important issue is the extent to which this increase in velocity (or drop in money supply as a share of the GDP) will be stabilized and then reversed as inflation is brought under control. Balancing various considerations, the monetary survey projection in Table 44.1 assumes that the velocity of money (and hence the stock of currency and deposits as a share of the GDP) will remain constant at the December 1993 level.¹ The projected early drop in real GDP allows room for some inflation in 1994, but this disappears as monetary expansion is squeezed and real GDP recovers.

12. The targets proposed for bringing inflation under control will require a radical change from past policies regarding net domestic credit. Perhaps the main

Table 44.1

Monetary Sector Account
(actual December 1993 and projected December 1994-97)

	Actual 1993	Projected 1994	Projected 1995	Projected 1996	Projected 1997
<u>Stocks at year-end (million tenge)</u>					
Net foreign assets (NFA)	-1,860	-8,473	615	47,791	116,653
Credit to government (net)	-576	4,721	20,550	48,269	87,855
Credit to rest of economy	15,445	121,113	233,591	330,880	378,315
Net other accounts	-6,297	-58,705	-139,761	-242,737	-346,174
Total Assets = Liabilities	6,712	58,656	114,995	184,202	236,649
Notes in hands of public	2,253	19,690	38,613	61,870	79,492
Deposit money	4,459	38,966	76,381	122,333	157,157
<u>Stocks at year-end (as percent of annual rate of GDP in December):</u>					
Net foreign assets (NFA)	-1.50	-0.78	0.03	1.40	2.66
Credit to government	-0.46	0.44	0.97	1.42	2.01
Credit to rest of economy	12.44	11.16	10.98	9.70	8.64
Net other accounts	-5.07	-5.41	-6.57	-7.12	-7.90
Total Assets = Liabilities	5.40	5.41	5.40	5.40	5.40
Notes in hands of public	1.81	1.81	1.81	1.81	1.81
Deposit money	3.58	3.58	3.58	3.58	3.58
<u>Flows during the year (as percent of annual total GDP):</u>					
Net international reserves (NIR)	6.24	1.07	0.76	1.55	1.42
(of which foreign exchange)	3.58	-0.70	-0.39	0.65	0.64
(of which gold stocks)	2.66	1.77	1.14	0.90	0.77
Credit to government	-1.98	1.00	1.00	1.00	1.00
Credit to rest of economy	46.58	19.95	7.11	3.51	1.20
Net other accounts	-31.20	-12.23	-5.31	-3.57	-2.29
Total Assets = Liabilities	19.63	9.79	3.56	2.50	1.32
Notes in hands of public	6.84	3.29	1.20	.84	0.45
Deposit money	12.75	6.50	2.36	1.66	0.88

Notes: Estimates for 1993 based on monetary data provided by NBK. Data for 1994-97 are simulations based on the targets and assumptions discussed in the text. Numbers may not add exactly because of rounding. December stocks as a share of GDP were calculated using estimates of the annual rate GDP for December. The stock for "net other accounts" includes all other asset and liability accounts; these estimates are strongly influenced by bank "profits" from high nominal interest rates (which are assumed to be added to capital and reserves) and, in the case of the figures on stocks, by the offsets to the revaluation of net foreign assets due to exchange rate changes. In the stock figures "net foreign assets" (NFA) includes substantial long-term liabilities, while in the flow figures the change in foreign long-term liabilities is included in "net other accounts". In the flow data only net international reserves (NIR) are included; the changes in NIR are divided between those in foreign exchange, which correspond to the figures in the BOP, and those which represent increases in gold stocks resulting from purchase of domestic gold for local currency. In the stock figures net foreign assets are valued at end-of-year exchange rates, with a revaluation adjustment included in "net other accounts"; in the flow figures net international reserves are valued at average annual exchange rates.

question to be asked about the accompanying projection of the monetary survey is whether the projected restrictions on credit to the enterprise sector (the "rest of the economy") will be economically and socially acceptable. Credit policies must be tight enough to provide strong pressures for inefficient and loss-making firms to undertake restructuring. But these firms must not be so hard pressed that the impact on output and employment becomes so severe that the credit policies are reversed and the effort to bring inflation under control is at least temporarily abandoned.

The Consolidated Government Budget

13. Fiscal management in Kazakhstan has usually been analyzed on the basis of trends in the regular government budget. Although this budget includes both local authorities and the central government, it leaves out the extrabudgetary funds (EBFs). The most important EBFs are those related to social protection, particularly the pension fund and the employment fund. Their omission from fiscal analysis could be justified if one could safely assume that the extrabudgetary accounts would, as a group, be balanced and if, in addition, there were no important policy issues that could make desirable a reallocation of revenues and expenditures between the regular government budget and the extrabudgetary accounts. At present, however, neither of these conditions is fulfilled. There are major policy issues, particularly with respect to the social protection funds, that need to be considered as part of the budgetary review process. Moreover, the extrabudgetary accounts make major additions to the levels of taxation and expenditure, so general fiscal policy issues cannot be adequately considered without taking them into account. In the accompanying macroeconomic framework we have used a consolidated account that includes estimates for the extrabudgetary accounts, as well as for the regular government budget.

14. The consolidated budget of Table 44.2 finances a wide range of expenditure programs, but for our purposes it is convenient to consider four broad classes of expenditures: (1) general government administration (Consumption in Table 44.2); (2) investment expenditures; (3) social protection (transfers to households and consumer subsidies); and (4) restructuring and producers' subsidies (traditional producer subsidies, including a proposed economic restructuring safety net for enterprises).

15. *General government administration.* As Table 44.2 indicates, the economic program adopted at the start of 1994 included a sharp reduction in general government consumption, expenditures from an estimated 18.4 percent of the GDP in 1993 to 16.0 percent of a smaller GDP in 1994, a reduction that may not be easy to implement. And the clearance of arrears in April–May may add another 2.3 percent of the GDP to consolidated government expenditures during this year.

16. *Expenditures for social protection.* Expenditures for social protection

Table 44.2

Consolidated Government Budget
(estimated 1993 and projected 1994–97, as percentages of GDP)

	Estimate 1993	Projected 1994	Projected 1995	Projected 1996	Projected 1997
Current revenues and grants	34.31	33.45	34.55	36.34	38.19
Direct Taxes	17.06	14.53	17.17	18.77	20.28
Indirect Taxes	9.98	11.09	13.41	14.30	15.38
Non-Tax revenues	6.09	6.67	3.35	2.80	2.13
External Grants	1.17	1.17	0.62	0.49	0.42
Current expenditures	32.08	35.17	33.38	34.14	33.84
Consumption	18.39	15.96	15.94	16.32	16.75
Interest on domestic debt	0.00	0.00	0.00	1.12	0.69
Interest on external debt	0.11	0.69	0.66	0.67	0.66
Transfers to households	9.62	11.31	10.80	11.30	11.26
Total subsidies	4.18	7.21	5.98	4.74	4.49
Consumer subsidies	1.70	0.41	0.50	0.50	0.50
Producer subsidies	2.48	4.52	4.49	4.24	3.99
1994 arrears clearance costs	--	2.28	0.99	--	--
Budgetary saving	2.01	-1.72	1.16	2.21	4.35
Capital revenues	2.74	1.78	1.53	2.01	1.94
Investment expenditures	6.08	7.79	7.82	8.10	8.64
Deficit (+) and its financing	-1.33	-7.73	-5.13	-3.89	-2.35
Borrowing from banking system	-1.98	1.00	1.00	1.00	1.00
Other domestic sources	2.99	1.89	0.99	1.12	0.31
External borrowing (net)	0.32	4.84	3.13	1.77	1.04

Notes: Data are estimates and simulations by the author. These consolidated budget data include receipts and expenditures of the central and local governments and also of the extrabudgetary funds; intergovernmental transfers are excluded.

(consumer subsidies, and other transfers to households) are projected to gradually rise, from 11.32 to 13.4 percent of the GDP in 1997.² The increase in unemployment benefits alone is expected to be 1.9 percent of the GDP, made necessary by the assumed rise of unemployment to 12 percent of the labor force.

17. The projected growth of pension fund expenditures in 1994–97 reflects in large part the changing age structure of the population. While total population is assumed to grow at 0.86 percent per annum, the population eligible for pensions is projected to grow at 1.71 percent per annum. The average benefit level is held constant in real terms at the 1993 level. This level is equivalent to about one-

fourth of per capita consumption in 1990, and must be seen as a very modest, if not parsimonious, level for a society in which most elderly people have few if any assets and no other source of retirement income. Looking at all forms of projected revenues and expenditures, however, it is not possible to see how the average pension benefit could be increased significantly above the presently projected level. The tax reductions effective at the start of 1994 have changed the pension fund from one that might have run a modest surplus, to one that will run a substantial deficit.

18. *Consolidated government capital expenditures.* Investment spending has been one of the most severely reduced budget items in the past few years, dropping from 11.4 percent of the GDP in 1992 to an estimated 6.1 percent in 1993. Deteriorating economic infrastructure will frustrate the economic output targets unless investment expenditures in key sectors can be restored. Moreover, there is an equally urgent need to expand capital transfers to directly productive activities to support economic restructuring programs.

19. Starting from the low 1993 base, the projected 1994–97 consolidated budget would provide for a substantial recovery in government-financed investments in real terms, increasing by 22 percent over the period 1993–97. Investment expenditures, however, would still be well below 1992 levels, so careful administration will be necessary.

20. *Producer subsidies and restructuring subsidies.* In the short run, budgetary outlays for producer subsidies are likely to increase, not because total producer subsidies are increasing, but because their cost is being shifted from the monetary account to the budget. In the recent past, enterprise subsidies largely took the form of “directed credits” (especially to enterprises in financial difficulty) and interest rates that were highly negative in real terms. Given the tight budgetary situation, the need for restructuring subsidies will have to be met largely by reallocating the producer subsidies that are already in the budget. But because the need for restructuring subsidies is likely to be substantial and it will take some time to reprogram the existing producer subsidies, the accompanying budget simulations provide some additional funds for restructuring purposes.

21. Just as there must be a safety net for individuals and households, there must also be a safety net for distressed enterprises. However, an effort should be made clearly to separate “bankable” operations from those that are, or should realistically be expected to become, subsidies. “Bankable” operations should be financed by long-term capital resources on commercial terms. In contrast, assistance to distressed enterprises should be: (1) financed from the budget, (2) provided on a grant basis (or, for activities expected to remain in the public sector, an equity basis), and (3) always conditioned on the preparation and implementation of an agreed-on restructuring program.

22. *Consolidated budget expenditures.* The simulated trend in total government expenditures involves a modest decline, from 43.0 to 42.5 percent of the GDP, between 1994 and 1997. The most important factors tending to increase

government expenditures are the growth in unemployment compensation benefits and the transfer of social functions from enterprises to local authorities. Both of these changes will reduce financial pressures on enterprises. The most important factor leading to a decrease in government expenditures is the assumed nonrepetition of the arrears clearance subsidies of 1994 and 1995. Significant changes in the level of other expenditures are not projected; the projected increase in interest costs is offset by reductions in expenditures for consumption. In terms of fiscal management, this is an ambitious target, especially in 1994. A significantly more restrictive expenditure program seems neither desirable nor realistic; a significantly less restrictive program would compromise the objective of bringing inflation under control.

23. *Consolidated budget revenues and deficit financing.* Even the restricted expenditure levels summarized above will require a large increase in tax revenues if they are to be accompanied by a reduction in the budget deficit to levels consistent with a progressive reduction in the rate of inflation. Revenues from direct and indirect taxes are estimated at 25.6 percent of the GDP in 1994. In the simulations the tax burden will have to increase to 35.7 percent of the GDP in 1997, an increase of 10.1 percent of the GDP. By any standard, this is an exceedingly ambitious target. It is estimated that about three-fourths of the total increase would require additional "tax effort" in the form of new taxes, higher rates for existing taxes, or improved tax compliance. The remaining one-fourth could result from application of the present tax regime to the changing structure of income and expenditure, especially the increased share of labor remuneration that is expected to be in the form of wages subject to the 30 percent wage tax. The need for such a large increase in revenues over the coming years reflects partly the need to make up for the decline in the wage tax rate at the beginning of 1994 (which reduced revenues by about 1.6 percent of the GDP).

24. The combination of expenditure controls and tax effort would permit the consolidated budget deficit to decline from about 7.8 percent of the GDP in 1994 to 2.8 percent of the GDP in 1997. This would permit borrowing from the monetary system to be limited to no more than 1.0 percent of the GDP. Additional domestic resources could be mobilized by nonbank domestic borrowing (which averages 1.1 percent of the GDP annually in simulations for 1994-97). The domestic borrowing in 1994 is taking the form of dollar-denominated one-year bonds issued in connection with the clearance of arrears. Borrowing could also be done using short-term Treasury notes or similar paper. Both types of instruments could contribute to developing the financial sector, as well as providing resources for the budget. Market determination of the interest rate on short-term Treasury notes would be a useful indicator for interest rates. Net external borrowing to finance the budget deficit is projected to decline from nearly 5.0 percent of the GDP in 1994 to 1.0 percent of the GDP in 1997. This decline in net foreign borrowing reflects both the growth in repayment obligations and, because it is measured as a share of the GDP, the projected revaluation of the tenge.

The Balance of Payments

25. Kazakhstan's balance of payments prospects for the medium term are generally good. With extensive natural resource wealth in metallic minerals, coal, and petroleum, it has an unusually favorable resource base. However, a major uncertainty is how the country's petroleum wealth can be brought to the world market, given its landlocked position. On the other hand, not only will there be a large inflow of direct foreign investment, but also international lenders will look more favorably on lending to Kazakh borrowers because of the country's strong export potential and expected creditworthiness.

26. Basic data on the balance of payments outlook are provided in Table 44.3. Both exports and imports are expected to increase substantially in dollar terms. However, they decline as a share of the GDP because of the expected real appreciation of the exchange rate and, at the end of the period, the increase in real GDP. Because the outflows from interest payments on external debt and profit remittances on direct foreign investment are growing over the period, consolidated net factor service payments rise to about US \$700 million in 1997. The average current account deficit of 5.4 percent of the GDP in 1994-97 is above the level that can normally be sustained by a country whose external financing consists of loans on commercial terms and direct foreign investments. However, this comparatively high deficit figure partially reflects the undervaluation of the tenge in the initial years. At current prices and exchange rates, the current account deficit is declining during the period and is down to 3.7 percent of the GDP in 1997. The effect of this deficit on the debt service burden is reduced by the fact that much of the deficit will be financed by direct foreign investment (DFI).

27. DFI, primarily in the petroleum sector, plays a major role in the capital account. The expected inflows rise from US \$330 million in 1994 to US \$912 million in 1997. When trade credits and medium- and long-term (M&LT) loans are combined, net borrowing is expected to average about US \$840 million annually. The projection includes an average of about US \$80 million annually in "errors and omissions"; this is an allowance for unrecorded capital flight. However, holding capital flight to this level depends on both the reasonable success of the stabilization effort and having domestic interest rates that offer an adequate return to savers. The development of a domestic market for dollar-denominated bonds could offer an attractive alternative to capital flight.

28. The BOP simulations suggest a very comfortable buildup in Kazakhstan's foreign exchange reserves during the next several years. Including gold from domestic sources, increases in net foreign exchange reserves would average more than US \$300 million annually during 1994-97.³ In terms of months of import coverage, the central bank's gross foreign exchange reserves, including gold, rise from the equivalent of 2.5 months' imports at the end of 1993 to 3.24 months' imports at the end of 1997.

Table 44.3

Balance of Payments
(estimated 1993 and simulated 1994–97, in millions of US\$)

	1993	1994	1995	1996	1997
Current Account (million US\$)					
Exports (merchandise)	3,922.6	5,909.2	6,499.9	8,095.3	9,367.3
Imports (merchandise)	4,466.4	6,845.4	7,495.7	8,853.4	9,726.3
Trade balance	-543.8	-936.2	-995.8	-758.1	-359.0
Non-factor services (net)	-145.5	-198.0	-219.1	-247.6	-286.8
Resource balance	-689.3	-1,134.2	-1,214.9	-1,005.7	-645.8
Net factor services - Government + ROE	-46.3	-261.0	-316.1	-493.9	-702.0
Net current transfers	120.0	165.0	135.0	135.0	135.0
Current account balance	-615.6	-1,230.2	-1,396.0	-1,364.6	-1,212.8
Capital Account (million US\$)					
Direct foreign investment	123.0	330.0	345.0	844.0	912.0
Government M&LT loans	33.2	598.8	684.0	492.2	337.2
ROE Trade credits	362.5	365.2	362.5	290.0	232.0
Exceptional Financing - Government	408.0	86.0	0.0	0.0	0.0
Exceptional Financing - ROE	372.5	-148.2	0.0	0.0	0.0
Capital not elsewhere included (n.e.i.)	-146.8	0.0	0.0	0.0	0.0
Errors and omissions	-170.8	-100.0	-80.0	-80.0	-60.0
Change in foreign exchange reserves					
Excluding gold	366.0	-98.4	-84.5	181.6	208.4
Including gold (domestic sources)	638.2	151.6	165.5	431.6	458.4
Major Flow as Shares of GDP (at current prices and exchange rates):					
Exports (merchandise)	38.34	41.79	29.76	29.11	28.92
Imports (merchandise and net NFS)	45.08	49.81	35.32	32.72	30.92
Resource Balance	-6.74	-8.02	-5.56	-3.62	-1.99
Net Factor Service Payments of Government(-)	-0.11	-0.69	-0.66	-0.67	-0.66
Net Factor Service Payments of ROE (-)	-0.35	-1.16	-0.78	-1.11	-1.51
Net Current Transfers	1.17	1.17	0.62	0.49	0.42
Current Account Balance	-6.02	-8.70	-6.39	-4.91	-3.74
Direct Foreign Investment	1.20	2.33	1.58	3.03	2.82
Net M&LT Loans to Government	0.32	4.23	3.13	1.77	1.04
Net M&LT Loans to ROE	3.54	2.58	1.66	1.04	0.72
Exceptional Financing - Government	3.99	0.61	0.00	0.00	0.00
Exceptional Financing - ROE	3.64	-1.05	0.00	0.00	0.00
Capital n.e.i. and E&O - ROE	-3.10	-0.71	-0.37	-0.29	-0.19
Change in net international reserves (excluding gold from domestic sources)	3.58	-0.70	-0.39	0.65	0.64

Notes: Ministry of Economy and the author's estimates for 1993; the author's simulations for 1994–97. Actual and expected variations in the real exchange rate make the trends in dollar flows substantially different than the trends in these flows expressed as a share of GDP.

29. The favorable balance of payments and reserve situation offers a margin of comfort for the economic managers. The nation's gold and foreign exchange reserves are there to be drawn on to protect other aspects of the economic program. By maintaining a flexible exchange rate, with the level fixed in the auction market, the authorities can choose to enter the market to buy for reserves, or they can sell from reserves; in either case the change in supply should have the desired effect on the exchange rate and the level of imports. Also, should the enterprise sector need a somewhat higher level of trade credits to help finance the industrial restructuring effort, the country should be creditworthy for the increased level of external borrowing.

30. Despite the large nominal devaluation during 1993, in real terms there was a strong appreciation of the Kazakh currency. The index of the real exchange rate appreciated by 176 percent between December 1992 and December 1993. While the nominal rate will, of course, respond to fiscal and monetary management and to expectations regarding future policies, over the medium term some further appreciation of the real exchange rate seems likely, as domestic relative prices move closer to those of Kazakhstan's trading partners, and as market exchange rates come closer to purchasing power parity for tradable goods.

Investment and Consumption; Enterprises and Households

31. *An overview of the origin and use of resources.* Table 44.4 summarizes the projected origin of real resources (from production and net imports) and the use of real resources (for consumption and investment) in the Kazakh economy. This table brings together what has been discussed earlier about trends in output, the balance of payments, and the consolidated government budget. Taken together, these determine the trends in real resources that will be available for the rest of the economy (enterprises and households). A projection of self-financed investment expenditures by the enterprise sector is added. Private or ROE consumption is then calculated as a residual.⁴ The implications for households and enterprises are then examined in more detail with the help of an analysis of the flows of funds for households and enterprises.

32. Although total output changes only slightly between 1994 and 1997, there will be large shifts in how this output will be used. Thus, by 1997, the level of fixed investment expenditures (measured in 1993 prices) is projected to be about 40 percent above the levels of 1993 and 1994. Several factors will tend to slow the pace at which investment by enterprises will recover: the inevitable uncertainties, the short time horizon that is typical when inflation rates are high, and difficulties in mobilizing long-term capital. However, investments in the energy sector and also the high financial rates of return (e.g., on investments in energy-saving equipment) will work in the opposite direction. Thus the projections provide for a relatively strong recovery in the real level of fixed invest-

Table 44.4

The Origin and Use of Real Resources
(estimated 1993 and simulated 1994–97)

	1993	1994	1995	1996	1997
A. At constant 1993 prices and exchange rates (in millions of tenge)					
Gross Domestic Product (GDP)	28,654	26,514	25,932	25,999	27,006
Resource Balance (ResBal)	1,931	2,337	2,372	2,271	1,816
Exports (merchandise)	10,987	10,680	10,988	11,718	13,304
Imports (merchandise)	12,510	12,526	12,835	13,427	14,480
Non-factor services (net)	-408	-491	-525	-563	-640
Total Expenditures (GDP+ResBal)	30,585	28,851	28,303	28,270	28,823
Consumption expenditures	23,708	22,535	22,187	21,761	21,611
Government	5,270	4,280	4,182	4,325	4,544
Rest of economy (households)	18,439	18,255	18,005	17,436	17,317
Investment expenditures	6,877	6,317	6,116	6,509	6,962
Fixed investment	4,871	4,726	5,468	5,989	6,718
Inventory investment	2,006	1,591	648	520	243
B. Volume Indices (1993=100)					
Gross Domestic Product	100.0	92.5	90.5	90.7	94.3
Total Expenditures	100.0	94.3	92.5	92.4	94.2
Consumption expenditures	100.0	95.0	93.6	91.8	92.2
Government	100.0	81.2	79.4	82.1	86.2
Rest of economy (households)	100.0	99.0	97.6	94.6	93.9
Investment expenditures	100.0	91.9	88.9	94.6	101.2
Fixed investment	100.0	97.0	112.3	122.9	137.9
Inventory investment	100.0	79.3	32.3	25.9	12.1
C. Percent Share of GDP (from data in current prices)					
Gross Domestic Product	100.00	100.00	100.00	100.00	100.00
Resource Balance	6.74	8.02	5.56	3.62	1.99
Exports (merchandise)	38.34	41.79	29.76	29.11	28.92
Imports (merchandise)	-43.66	-48.41	-34.32	-31.83	-30.03
Non-factor services (net)	-1.42	-1.40	-1.00	-0.89	-0.89
Total Expenditures (GDP + ResBal)	106.74	108.02	105.56	103.62	101.99
Consumption expenditures	82.74	84.02	84.56	82.12	80.59
Government	18.39	15.96	15.94	16.32	16.75
Rest of economy (households)	64.35	68.06	68.62	65.79	63.84
Investment expenditures	24.00	24.00	21.00	20.50	21.40
Fixed investment	17.00	18.00	18.50	19.50	20.50
Inventory investment	7.00	6.00	2.50	2.00	0.90
(of which increase in gold stocks in NIR)	2.66	1.77	1.14	0.90	0.77

Notes: Estimates and simulations by the author.

ment. The increase in fixed investment as a share of the GDP is less dramatic than the increase in fixed investment at constant prices because the prices of investment goods are expected to decline relative to consumer goods. This movement in relative prices reflects the expected gradual revaluation of the tenge combined with the larger weight of imports in investment expenditures, and also the expected rise in the relative prices of foodstuffs and other agricultural products (as Kazakhstan prices move more in line with world prices). Inventory investment has been relatively high in the past few years, but annual additions to inventory should decrease sharply as credit becomes tighter, inflation is slowed, and restructuring enterprises stop producing goods for which they have no market.

33. The real resources needed to increase fixed investment would come from (1) the large projected decline in inventory investments, (2) the projected decline in government consumption, and (3) some further decrease in household consumption. Per capita private consumption as measured in the national accounts has already fallen drastically since 1990. With that year as "100," the index had fallen to 58 by 1993. A further drop, to 53 (in 1997), is implied by the macroeconomic framework. Given the likely trends in output during the restructuring process, and the need to increase fixed investment, it does not seem possible to reverse this declining trend in private consumption before 1998. The fact that average per capita consumption by households is likely to decline somewhat further before beginning to recover adds to the importance of the social protection programs and the provision of an effective safety net for those most adversely affected by the economic restructuring process and other vulnerable groups.

The "Rest of the Economy" Account

34. The account for households and enterprises—the "rest of the economy"—shows the flows between the ROE and the three economic management accounts (monetary, budget, and BOP) and also the ROE's use of resources for consumption and investment. Thus it indicates what is implied for households and enterprises by the developments projected in the other sectors along with the assumed trends in total GDP and investment. The results are presented in Table 44.5. This table serves a number of purposes. It shows the origin of savings by the rest of the economy and how these savings, along with borrowing from the monetary system and from abroad, finance the real and financial investments of these sectors. Given the recent "liquidity squeeze" on the enterprise sector, and the need for relatively tight credit policies to bring inflation under control, it is particularly important to analyze how the projected level of fixed investment by enterprises could be financed.

35. *Household disposable income.* Although wages and other factor income received by households total 46 to 48 percent of the GDP, household disposable

Table 44.5

Sources and Uses of Funds for the "Rest of the Economy"
 (estimated for 1993 and projected 1994–97, as percentages of GDP)

	1993	1994	1995	1996	1997
A. Disposable Income of Household Sector					
Sources of disposable income					
Wages and other factor income	46.04	47.85	47.71	46.66	45.91
Non-wage transfers from enterprises	24.16	17.55	14.78	11.83	9.92
Government transfers to households	9.62	11.31	10.80	11.30	11.26
Less direct taxes paid by households	-2.73	-2.40	-2.40	-2.40	-2.40
Disposable income of households	77.09	74.31	70.89	67.39	64.68
Uses of disposable income					
Household consumption	64.35	68.06	68.62	65.79	63.84
Increase in money holdings of households	12.74	6.25	2.27	1.59	0.84
B. Disposable Income of Enterprise Sector					
Sources of disposable income					
Gross profits (including depreciation)	48.16	48.27	44.86	43.78	43.20
Interest from government	0.00	0.00	0.00	1.12	0.69
Less non-wage transfers to households	-24.16	-17.55	-14.78	-11.83	-9.92
Less direct taxes paid by enterprises	-14.33	-12.13	-14.77	-16.37	-17.88
Less non-tax government revenues	-6.09	-6.67	-3.35	-2.80	-2.12
Less net factor payments to abroad	-0.35	-1.16	-0.78	-1.11	-1.51
Disposable income of enterprises	3.23	10.77	11.18	12.80	12.46
Uses of disposable income					
Enterprise gross savings (include depreciation)	3.23	10.77	11.18	12.80	12.46
C. Consolidated Capital Account for the "Rest of the Economy"					
Sources of capital					
Household and enterprise saving	15.97	17.02	13.45	14.39	13.30
Loans from monetary system	46.58	19.95	7.1	3.51	1.20
Direct foreign investment	1.20	2.33	1.58	3.03	2.82
Net M&LT loans	3.54	2.58	1.66	1.04	0.72
Other balance of payments capital flows	0.54	-0.10	-0.37	-0.29	-0.19
Total capital sources	71.82	40.13	23.43	21.69	17.85
Uses of capital					
Investment financing	15.26	14.44	12.04	12.50	11.99
Increase in money holdings	19.63	9.79	3.56	2.50	1.32
Increase in bank capital and reserves	31.20	12.23	5.31	3.57	2.29
Purchase of assets from government (capital revenues)	2.74	1.78	1.53	2.01	1.94
Net lending to government	2.99	1.89	0.99	1.12	0.31
Total capital uses	71.82	40.13	23.43	21.69	17.85

Notes: Author's estimates and simulations. Except for the net flow between enterprises and households ("non-wage transfers from enterprises to households"), entries in this table are counterparts of entries in Tables I.1, I.2, I.4 and I.5. However, a current account flow may be disaggregated into its household and enterprise components in Table I.6. The estimate for "non-wage transfers from enterprises to households" is calculated as a residual which would be sufficient to finance ROE consumption plus savings in the form of increased money holdings. Because of lack of information enterprise profits distributed to households are included in the disposable income and savings of enterprises rather than of households. No information is available on capital flows between enterprises and households.

income is expected to be in the range of 65 to 74 percent of the GDP. The difference is explained by three factors. The most important is nonwage transfers from enterprises, including cash bonuses, heavily subsidized housing, and the distribution of goods and social services provided by enterprises. The second, but increasingly important, factor consists of transfers from the government to households through social protection programs. The third factor is that in Kazakhstan the burden of direct taxation falls almost entirely on the enterprise sector. The projections assume that there will be a gradual shift from nonwage to regular wage payments for labor. Thus enterprise-to-household transfers are expected to decline from an estimated 24.2 percent of the GDP in 1993 to about 10 percent of the GDP in 1997.⁵ Local authorities will gradually provide social services to replace these transfers, but only as taxes or user charges can be put in place. The government has recently limited the size of an enterprise's "consumption fund" (which is the source of much of the nonwage labor income) to a maximum of 20 percent of the enterprise's gross profits; this will make a decline in these benefits necessary even when reductions are not being forced by the liquidity situation of the enterprises or the management's desire to improve profits.

36. Real wages are commonly measured by deflating the average cash wage by an index of consumer prices. This measure, however, has serious limitations as an indicator of effective household income in Kazakhstan. Most important, it excludes the relatively large share of labor remuneration that is not in the form of cash wages. The simulations suggest that when 1997 is compared with 1993, there will be a rise in real cash wage as commonly defined—but that this will be more than offset by the decline in the other forms of labor remuneration. In addition, as inflation slows, household saving via cash accumulation is expected to decline. So household consumption as a share of the GDP can remain relatively stable while household disposable income as a share of the GDP declines significantly. The reduced rates of inflation, however, are preconditions for these developments.

37. *Enterprise disposable income and saving.* Gross profits, including depreciation but excluding interest income from government and abroad, are expected to average about 45 percent of the GDP over 1994–97. Although this figure may seem high when compared to market economies, it is quickly eroded because nonwage transfers to households are treated as a use of gross profits rather than as a cost, and because most direct taxation falls on enterprises rather than on

households (see Table 44.6). As a result, enterprise disposable income and gross savings are expected to be about 11–13 percent of the GDP during 1994–97, a very modest level.

38. *The consolidated capital account.* This account (in Table 44.5) shows the sources and uses of capital for the rest of the economy sector. However, the account is basically an account for the enterprise sector and is primarily intended to show how that sector can obtain 14 percent of the GDP in 1994 and 12 percent in 1995–97 to finance real investment. The primary source of finance will be the saving of the enterprise sector itself, which is projected to rise to equal the total necessary by 1997. The large early drops in total capital sources and uses relate to the projected decline in the rate of inflation and the associated decline in the expansion of the monetary system. Enterprises, like households, will benefit from the declining need to hold higher nominal money balances. This saving will be more than offset, however, by the decline in loans from the monetary system.⁶ While the resources should be there to finance the levels of investment indicated in Table 44.5, the financial situation of the average enterprise will remain tight. And, necessarily, a good many enterprises will be worse off than the average and are likely to encounter serious financial difficulties. The enterprise safety net will have to be in place if “bailout” pressures are to be successfully resisted.

Summary and Conclusions

39. The macroeconomic framework discussed in this report has attempted to outline a feasible path among the sometimes conflicting policy objectives and structural obstacles that confront Kazakhstan’s policy makers. The suggested path will not always be an easy one to follow. It recognizes that (1) a good deal of economic restructuring will have to take place before satisfactory growth is renewed; (2) this restructuring process will doubtless be accompanied by rising open unemployment; and (3) although the previous economic system broke down quickly, it will take time to build the institutions, structures, and infrastructure needed for Kazakhstan to have a properly functioning competitive market economy. Thus output is not expected to begin to grow again until 1997. Because of the constrained level of real resources available to the economy, the priority policy objectives must include that of avoiding further reductions in output and accelerating the renewal of growth.

40. When compared with 1992 and 1993, much more restrictive policies regarding credit to enterprises are needed to bring inflation under control. However, if these policies are to be durable, a safety net for distressed enterprises will be required. Banking system credit should not be used to provide subsidies to distressed enterprises, as has been done in the past. To do so would delay developing a sound commercial banking system without really meeting the restructuring needs of the enterprises concerned. Instead, necessary subsidies for restructuring should be provided through the government budget and should be

conditioned on the design and implementation of agreed-on economic restructuring programs (including, in appropriate cases, downsizing and liquidation).

41. Meeting these expenditure requirements will be possible only if there is a substantial increase in government revenues. The projections indicate that the cumulative increases in tax revenues should amount to 7 to 8 percent of the GDP between 1993 and 1997. This estimate assumes that the very substantial consumption expenditure reductions foreseen in the 1994 budget estimates will be achieved. Such a large increase in tax revenues is necessary mainly to offset the decline in receipts from the "inflation tax" and from the decrease in the wage tax at the start of 1994. Only if these increases in tax collections are realized will it be possible to both finance essential expenditures and hold deficit financing from the central bank to the targeted 1 percent of the GDP. The balance of payments outlook is quite favorable. In a generally very tight economic situation, there should be some flexibility (especially in 1996 and 1997) in the extent to which external resources are drawn on (through a higher trade deficit accompanied by more modest increases in international reserves). As Kazakhstan is a landlocked country, adequate trade and transit agreements with its neighbors will be needed if its export potential is to be realized. Export credits are likely to become an important form of capital inflow; arrangements need to be made to see that government guarantees on these credits are given only for activities that promise to be economically and financially viable.

Appendix A: The Flow-of-Funds Accounting Framework

42. The macroeconomic framework used in this report is based on a sources and uses of funds accounting framework. This integrates, into a consistent set of accounts, (1) the monetary system account, (2) the budget (including the main extrabudgetary funds), (3) the balance of payments, (4) an account for the rest of the economy (households and enterprises), and (5) the origin and use of resource flows from the national income accounts. This has proved to be a useful approach for the design and analysis of government economic policies (as reflected in the budget, the monetary account, and the balance of payments), given expectations regarding external factors and real growth and investment. An important benefit of the approach is that it makes explicit the implications of trends in the "economic management accounts" for the private sector (or, in the case of Kazakhstan, the "rest of the economy").

43. The use of a consistent macroeconomic accounting framework also contributes to improvements in the data used for economic policy analysis. This is especially useful in the republics of the Former Soviet Union, where even roughly comparable data are available for only a short historical period and where economic and financial statistics are undergoing revisions to improve their usefulness. Table 44.6, "Sources and Uses of Funds Matrix for Kazakhstan (1994)," indicates what is about the minimum degree of detail that is needed.

This matrix has thirty-two variables, each of which represents a flow between two of the sectors of the economy, or between a sector and the "national accounts," which show the origin and use of resources. Each flow represents a source of funds for the sector shown to its left and a use of funds of the sector shown above it. The column and the row for any sector comprise its sources and uses account. A more disaggregated framework might contain separate accounts for the enterprise and household sectors, or for the regular government budget and extrabudgetary agencies, or for the central bank and the commercial banks. The degree of detail appropriate in the accounting framework depends on the data available, the time available, and the purpose of the exercise. The same is true for the extent to which it becomes a macroeconomic model, with behavioral relationships, rather than a consistent accounting framework.

44. The sources and uses matrix illustrated in Table 44.6 records no discrepancies and therefore requires statistical consistency between the "source" and the "use" flows. When working with historical data, and when two separate estimates are available for any one entry, it is necessary to reconcile the conflicting data or choose one of the two as the better estimate.

45. Table 44.7 presents the same data as Table 44.6, but this time in the more conventional format in five separate accounts and including relevant subtotals. The "stubs" on Table 44.7 also serve to identify the symbols for the variables shown on the matrices in Table 44.6.

Table 44.6

Sources and Uses of Funds Matrix for Kazakhstan, 1994
 (all data are shares of GDP in 1994)

Current Account:

	Government Budget	Balance of Payments	Monetary System	Private Sector (ROE)	National Accounts	Total Sources
Government Budget		Tfg 1.17		Td 14.53 NTRev 6.67	Ti 11.09 -Sub -7.21	26.25
Balance of Payments	Ngf 0.69			FSPpf 1.16	M 49.81 -X -41.79	9.87
Monetary System						
Private Sector (ROE)	Tgp 11.31 Ngp 0.00	Tfp 0.00			GDPfc 96.12	107.44
National Accounts	Cg 15.96 Sg -1.72	Sf 8.70		Cp 68.06 Sp 17.02		108.02
Total Uses	26.25	9.87		107.44	108.02	

Capital Account:

	Government Budget	Balance of Payments	Monetary System	Private Sector (ROE)	National Accounts	Total Sources
Government Budget		Lfg 4.84	Lmg 1.00	Lpg 1.89 Kpg 1.78	Sg -1.72	7.79
Balance of Payments			NIRfx -.70		Sf 8.70	8.00
Monetary System				MQM 9.79		9.79
Private Sector (ROE)	KTyp 0.00	Lfp 0.82 DFI 2.33	Lmp 19.95 NOA -12.23		Sp 17.02	27.90
National Accounts	Ig 7.79		Im 1.77	Ip 14.44		24.00
Total Uses	7.79	8.00	9.79	27.90	24.00	

<u>National Accounts:</u>						
<u>Balance of Payments</u>						
X	Exports (merchandise)	41.79		GDP at market prices	100.00	
M	Imports (incl net NPS)	49.81		GDP at factor cost	96.12	
	Resource balance (X-M)	-8.02		Indirect taxes	11.09	
				Subsidies	-7.21	
	Net Factor Service Payments	-1.85		X	Exports	41.79
Ngf	Interest, gov't to ROW	-0.69		M	Imports	49.81
FSPpf	FSP, private to ROW	-1.16			Resource balance	-8.02
					Total expenditures	108.02
Tfg	Transfers to government	1.17			Total consumption	84.02
Tfp	Transfers to private sector	0.00		Cg	Government consumption	15.96
-Sf	Current Account Balance	-8.70		Cp	Private consumption	68.06
					Total investment	24.00
DFI	Direct foreign investment	2.33		Ig	Government investment	7.79
Lfg	Net loans to government	4.84		Ip	Private investment	14.44
Lfp	Net loans to private sector	0.82		Im	Increase in gold stocks	1.77
NIRfx	Net intern'l reserves (ex-gold)	-0.70			Total savings	24.00
				Sg	Government saving	-1.72
				Sp	Private saving	17.02
				Sf	Foreign saving	8.70
						-
<u>Monetary Account (flows):</u>						
NIRfx	Net intern'l reserves (ex-gold)	-0.70				
Im	Increase in gold reserves	1.77				
Lag	Credit to government (net)	1.00				
Lap	Credit to private sector	19.95				
NOA	Net other assets	-12.23				
	Total assets	9.79				
MQM	Broad money (notes + deposits)	9.79				

Notes: ROW indicates "rest of world". "Private" should be understood to indicate, in the case of Kazakhstan, the "rest of the economy" (ROE). Components may not add to totals because of rounding.

Notes: ROW indicates "rest of world". "Private" should be understood to indicate, in the case of Kazakhstan, the "rest of the economy" (ROE). Components may not add to totals because of rounding.

Notes

1. Insofar as enterprise deposits might vary from the assumed level, the change would be expected to result in an equivalent variation in credit to the enterprise sector; thus such variations in the velocity of deposits would not affect the extent to which the enterprise sector was able to use bank credit to finance payments to others.

2. The 1997 estimate includes a 1.5 transfer from the consumption figure.

3. The BOP accounts for the change in net holdings of foreign exchange but not for the increase in gold reserves. This is because the central bank purchases domestically mined gold with domestic currency resources rather than foreign exchange.

4. In preparing the simulations for the macroeconomic framework, desirable levels of enterprise investment and household consumption are also looked on as targets. Thus it is only true in an algebraic sense that resource use by the "rest of the economy" is a residual depending on the total available and what the government takes. The process of using the flow-of-funds approach to prepare a macroeconomic framework involves making repeated iterations until one arrives at estimates for households, enterprises, the budget, the balance of payments, the monetary accounts, and total output that appear to be feasible, desirable, and internally consistent.

5. There is a substantial margin of error in these estimates of nonwage transfers because they are not directly measured, but can only be indirectly estimated as that amount that would make household disposable income equal to the total of consumption and household savings. It will be noted that in the simplified model used, all nongovernmental consumption is assumed to be by households, and all nongovernmental investment is assumed to be by enterprises. Presently available information on financial flows between households and enterprises is not sufficient for a more complete analysis.

6. If, from loans from the monetary system, one deducts the increase in money holdings and the increase in bank capital and reserves (which in the simulation model are equal to the "profits" resulting from the high nominal interest rates), then it is seen that on a net basis the rest of the economy is financing the banks rather than the banks financing the rest of the economy. The banks, of course, use these resources to finance lending to the government and the increases in international reserves.

Index

- Absorption, 177, 177*n.1*
Academic economics, 5–6, 591
Accountancy, 93
 and institutionalism, 94
 and macro measurement, 95
Accounting conventions, 9
Accounting pattern equation, 126–27
Accounting uniformity, 13, 15–16
Accrual and imputation perspective, 17, 267
Adams, Henry Carter, 94
Aggregate demand, 89, 315, 500–501, 518–19, 666, 683, 685
Almon, Shirley, 389
American Economic Association, 5
Ando, Albert, 442
ARIMA models, 213
Asset preference theory, 510
Assets, 43, 117, 119–20, 446
 demand, 404–5
 equations, 456–60
 estimates, 458–60
 specifications, 457–58
 disposals of, 157
 income-yielding long-term, 402–3
 Japanese accumulation of, 649–50
 major categories of, 400, 402–3
 real versus financial, 117, 118
 residual category of, 403
 returns on, 540
 subsoil, 293–94
 yield and prices of long term, 427

Bach, George Leland, 500, 503*n.10*
Balanced budget sector, 119
Balance of Payments Compilation Guide, 262
Balance of Payments Manual, 347, 348

Balance of payments statement, 17–18, 22, 50, 196
 household, 9–12
 for Indonesia, 672, 682, 684, 685
 for Kazakhstan, 708–10
 for Kenya, 205
 on local currency basis, 186
Balance of Payments Statistics Yearbook, 353
Balance Sheet Guidelines, 295, 296, 298
Balance sheets, 308, 310, 325
 converting stocks to flows, 117–20
 equities, 296–98
 financial assets and liabilities, 295–96
 fixed claims and equities separation, 295
 generalized sector, 116–17
 for Ghana, 241
 increments, 111, 189
 restrictions, 407–8
 and revaluation, 291–92
 structure of, 107, 295–98
 in System of National Accounts, 327–28, 333
“Balance Sheets for U.S. Economy”, 50
Bankers Trust Company, 141
Bank for International Settlements (BIS), 342–46, 352
Bank Holding Company Act, 546
Bank Indonesia, 678, 679–80, 681, 685
Banklike institutions, 303
Bank reserves model, 360–61, 380–94, 577
 and banking system, 387–88
 individual equations, 385–89
 and interest rate term structure, 388–89
 supply and demand for reserves, 382–83
 tests of, 389–92
 prediction, 390–92
 simulation of monetary policy, 392–94
 variables, 383–84

- Banks and banking, 167, 492, 529
 and bank reserves model, 387–88
 central, 301–2
 credit increases, 112
 credit rationing, 368
 and European currency crisis, 585–86
 and federal deficits, 501–2
 and federal securities, 513–14
 and flow of funds, 15
 in flow-of-funds matrix model, 370
 Indonesian, 673–74, 678, 679–80, 683
 as intermediaries, 151, 536
 lending by, 141, 367, 368, 370, 373
 demand, 461
 as uncleared market, 453–54
 liability management revolution, 546
 loan portfolios, 543–46, 546
 monetary policy impact on, 511–12
 reserve mechanism, 511
 reserve position, 417
 and saving-investment process, 507–9
 securities investments by, 545
 stability of size of, 543
 U.S. assets, 696
 and World War II, 500
See also Commercial banks
- Bears, 15, 88, 132–33
- Behavior equations, 378, 455
- Benchmark revisions, 212
- Berne Union, 342, 344
- BI certificates, 679
- BIS. *See* Bank for International Settlements
- Bischoff, Charles W., 435
- Bond market model, 432–33, 439–40
- Bonds, 123*n.1*, 428, 637
 corporate, 521–22
 current yield spreads, 534
 international sales, 256
 Treasury, 521–22
- Book credit basis, 12
- Borrowing, 119
- Bosworth/Duesenberry model, 361–62, 397–423
 asset markets defined, 402, 403
 commercial banking feature, 409–11
 financial-real sector links, 414–16
 individual unit behavior, 404–9
 balance sheet restrictions on, 407–8
 typical equation, 406–7
 market clearing, 397–8, 408, 409
 marketable securities feature, 411–12
- Bosworth/Duesenberry model (*continued*)
 mortgage market, 413–14
 simulation results, 416–22
 federal purchases multiplier, 420–22
 unborrowed reserves multiplier, 416–19
 surplus and deficit effects, 398
- Bottom-up method, 272
- Brainard, William C., 361
- Bretton Woods system, 558
- Bridging tables, 183, 244–52
 consumer financial asset flows and individual savings, 246
 consumer nonfinancial receipts and personal income, 245
 defined, 244
 federal government purchases, 249
 federal nonfinancial outlays and cash outgo, 247
 federal obligations, public debt, and cash borrowing, 248
 foreign purchases from U.S., 250
 private capital expenditures, 251
 private capital formation, 252
- Brill, Dan, 102, 104
- Brookings model, 360, 361, 388
- Bulls, 14–15, 88, 132–33
- Business, 687
 credit demands, 607–8
 cycles, 80, 88–89, 111
 and direct credit, 535
 external financing needs, 619–20
 financing, 623–26
 investment by, 566, 567, 569, 623
 investment equations, 415
 in Kazakhstan, 710–12
See also Corporations
- Capital
 accumulation account, 298–99, 300, 308, 311, 327, 340
 expenditures, 118
 finance account, 299, 308, 310–11, 316, 317, 320, 340
 flight, 258
 flows, 345
 formation, 427, 439
 gains, 123*n.1*, 460–61, 537, 541
 Indonesian formation of, 666–67, 668, 680–81
See also International capital flows

- CCET. *See* Centre for Co-operation with Economies in Transition
- CDs. *See* Certificates of deposit
- Centre for Co-operation with Economies in Transition (CCET), 343
- Certificates of deposit (CDs), 39–40, 546
- Chart Show, 592, 600–617
 data for projection, 615–17
 financial developments, 605–10
 credit demand rise, 607–609
 interest rate rise, 606
 introduction to, 600–605
 recovery year, 600
 more stimulative package, 612–13
 policy assumptions, 601–2
- Christ, Carl F., 361, 442
- Clark, J.M., 94–95
- CMOs. *See* Collateralized mortgage obligations
- Cohen, Jacob, 105
- Collateralized mortgage obligations (CMOs), 556
- Commercial banks, 551–52, 555, 609, 642, 691–92, 694
 assets and liabilities of, 544
 and Bosworth/Duesenberry model, 409–11
 credit expansion, 621
 and international debt, 343
 and monetary policy, 632–33
 money market liabilities of, 632
 number of American, 546
 role in intermediation, 543–47
 See also Banks and banking
- Commercial paper, 521, 522, 538, 540
- Commodities market, 454
- Communications industry, 624
- Consumer credit, 73, 107, 213, 538–39, 540, 545, 549, 626, 648–49, 690
- Consumer durables, 58, 75*n*.2, 287–88, 294, 375–76
- Consumer finance companies, 549
- Consumers, 283, 371–72, 373, 374, 626–28
- Consumption, 620, 622
- Contractual institutions, 631–32
- Convergence play, 578, 581–83, 587*n*.8
- Cooley, Charles H., 94
- Copeland, Morris A., 6, 79–81, 83–91, 101, 103, 106, 267
 compromise of his approach, 80
- Copeland, Morris A. (*continued*)
 impact on economics, 89–91
 rejection of discretionary hypothesis, 89, 90
 interest in accounting, 95–96
 methodology of, 83–85
 and cultural evolution, 85
 here and now phase, 84
 scientific hypothesis, 84
 practice of, 85–89
 opposition to equation of exchange, 87
 opposition to hydraulic analogy, 87–88
 and social accountancy, 93–99
 application to moneyflows, 97–99
 as inventor of, 95
 sources and applications of funds, 98
 terminology of, 138–39
- Core accounts, 267–68, 271–81
 definitions of, 276
 and modules, 276–77
 and purposes of national accounts, 271–75
- Corporations, 17, 455, 584–85
 bond issuance, 624–25
 bond yield, 435–36
 borrowing by, 368
 equities, 123*n*.1, 537
 financing needs, 623, 624
 foreign exchange activities, 577
 funds raised by nonfinancial, 608
 interest coverage, 561
 Japanese, 647
 sector estimation, 183
 securities, 367, 373
 stock issues, 625
- Credit
 bank, 112
 business advances of direct, 538
 cards, 303, 545, 546
 commercial bank expansion of, 621
 demands, 596–97, 607–8, 628
 depository, 692–93
 expansion of central bank, 174–75
 farm, 629
 federally sponsored agencies, 43–44, 528, 553
 flow of, 156, 689–99
 in Indonesia, 678–81, 685
 in Kazakhstan, 702, 715–16
 rationing, 398, 512, 565, 569
 revolving, 546

- Credit (*continued*)
 supply and demand summary, 635
 unions, 547–49, 555
See also Consumer credit; Credit market
- Credit Availability for Small Businesses and Small Firms (report), 64
- Credit market, 520–34, 545–46, 560
 borrowing in major, 527
 funds, 75, 616
 advanced to nonfinancial sectors, 542
 raised in, 615
 sector supplying, 526–28
 interest rates and flows in, 525–28
 net borrowing in short and long term, 524
 nonfinancial domestic sectors, 528
- Credit market instruction, 31
 defined, 31
- Creditor Reporting System, 344, 347, 349, 352
- Cultural evolution, 85
- Currency, 126
See also European currency crisis; Money
- Currency swaps, 346–47, 576
- Current account, 345
- Current Economic and Financial Conditions* (The “Greenbook”), 592
 credit demands, 596–97
 economic activity outlook, 595–96
 international development, 598–99
 price and resource use outlook, 596
 supply of funds, 597–98
- DAC. *See* Development Assistance Committee
- Data analysis. *See* Historical data analysis
- Data assembly, 181
- Debits and credits, equalities of, 7, 13
- Debt
 changes in business, 560–63, 566, 568–69
 incentives to rely on, 561–62
 privately issued, 536, 552
 proxy, 107
See also Credit; Credit market; Federal deficit; International debt
- Debt aggregate, 60, 62–63
 construction of, 62–63
 statistical discontinuities in, 62
- Debtor Reporting System, 344, 347, 349–52, 353–54
- Debt-to-income ratios, 560–61
- Deficit, federal. *See* Federal deficit
- Deficit sectors, 119, 121, 123
- Deficit spending, 436–37, 500–501
- De Leeuw, Frank, 360
- Demand equations, 382–83
- Demand-supply model, 427–42
 advantages of, 430–31
 concept of, 429–31
 equations in bond market model, 432–33
 fiscal policy effects analysis, 436–41
 methodological issues, 431
 prospects, 441–42
- Deposit money banks, 302
- Depository institutions, 73
- Depository Institutions Deregulation and Monetary Control Act (1980), 556
- Deposits, 402, 403, 529–30
 checkable, 549
 creating, 13–14
 demand, 360, 382, 383, 453, 511, 530, 546, 555
 equation for public’s holding of, 386–87
 insurance, 553
 interest rate ceilings on, 528, 549, 564
 interest rates on, 39–40
 nature of, 40
 nonbank institutions, 547–49
 time, 360, 382, 387, 511, 546, 555
 transferable, 303
- Derivation of simple system, 185–94
- Derivative securities, 576
- Development Assistance Committee (DAC), 343, 347
- Disaggregation, 272
- Discount rate, 411
- Discretionary hypothesis (Copeland), 14–15, 80, 88–89, 90, 111, 127–38
 application of U.S., 133–38
 outline of, 127–28
 rejection of by economics, 89, 90
 and readjustment processes, 128–30
 and transactor initiative, 131–32
- Disharding, 131–32, 139*n*.4
- Disintermediation, 528
- Dispositions. *See* uses
- Dorrance, Graeme, 104, 105–6
- DRI model, 361
- Drug money, 258

Duesenberry, James, 360
See also Bosworth/Duesenberry model

Econometric method, 5

Econometric models, 169–70

Economic equilibrium, 25

Economics

as a policy science, 591

evolutionary natural science viewpoint,
 83–84, 90–91

practitioner's realm, 6

*Economics: An Introduction to Analysis
 and Policy* (Bach), 500

Economic statistics, 5

in financial statement form, 8

ECU. *See* European currency unit

Electric utilities, 609

Electronic funds transfer, 303

Employment, 622

See also Unemployment

EMS. *See* European Monetary System

Energy policy, 601–2

Enterprise sectors, 282, 284

Equation of exchange framework, 97–98

Equity yields, 427

ERM. *See* Exchange rate mechanism

ESA. *See* European System of Accounts

Eurodollar borrowings, 528

European Community, 307, 573

European currency crisis, 493, 571–86

liquidity problems during, 586

private behavior during, 584–86

role of hedge funds, 584

prologue to, 578, 581–83

recent institutional change, 572

European currency unit (ECU), 586

European Monetary Cooperation Fund, 259

European Monetary System (EMS), 259,
 571

external net capital flows for, 581–82

European Monetary Union, 493, 578

European System of Accounts (ESA),
 307

Exchange rate mechanism (ERM), 572

Exchange rates, 170, 345–48, 364, 558

Exchange rate model, 468–84

capital inflows and yield differentials,
 471–73

capital inflows and price parity, 473–74

exchange rates and capital inflows,
 470–71

Exchange rate model (*continued*)

exchange rate determination, 474

portfolio and monetary models, 469

simulation test, 482–84

statistical estimates, 475–82

Expectations, 365, 447–48

and interest rates, 533–34

Farm credit system, 629

Farmers' Home Administration (FHA),
 556

Federal deficit, 107, 151, 448, 620, 638

average maturity of, 698

financing with money creation, 503*n. 10*

increase relative to GNP, 560

policy statement propositions, 500–
 501

and saving-investment process, 513,
 514–15

sharp increase in, 629

Federal Home Loan Bank Board, 555,
 569*n. 3*, 629

Federal Home Loan Mortgage Corporation
 (FHLMC), 556

Federally sponsored credit agencies,
 43–44, 528, 553

Federal National Mortgage Association
 (FNMA), 419–20, 556

Federal obligations, 367, 368, 370, 373,
 374

Federal Open Market Committee
 (FOMC), 60, 68, 687

Federal Reserve Board, 62, 101–2, 147,
 382, 591

Federal Reserve Bulletin, 64

Federal Reserve System, 387–88, 410,
 442, 501–2, 569

and intermediation, 543

and saving-investment process, 509–12

See also Regulation Q

Federal securities market, 513–19

FHA. *See* Farmers' Home Administration

FHLMC. *See* Federal Home Loan
 Mortgage Corporation

Finance

innovations in, 303

internal versus external, 151

Finance companies, 26

Financial analysis, 270

framework for, 115–23

Financial-flow projections, 141–42

- Financial institutions, 282, 301–6
 - federal security acquisition by, 513–14
 - financial market projection for private, 618–42
 - liquidity positions, 609
 - nonbank, 193, 510, 641
 - private credit extension of, 509, 512
 - nonmonetary, 302–3
 - “other monetary institutions” subsector, 302
 - and saving-investment process, 507–9
 - sectoring of, 316–17
- Financial market projection, 618–42
 - bonds sold in U.S., 637
 - and business financing, 623–26
 - and challenges to economy, 621–23
 - and commercial banks, 642
 - and consumers, 626–28
 - credit supply and demand summary, 635
 - and economy, 619
 - and federal agency debt, 639
 - and higher Treasury debt, 628–29
 - and interest rates, 633
 - lending and investing, 630–33, 640
 - mortgages and housing, 636
 - nonbank financial summary, 641
 - tax exemptions, 629–30
 - Treasury debt, 638
 - and Treasury debt, 638
- Financial markets, 367–68, 492
 - behavior of, 24–25
 - clearing with full financial structure, 397–423
 - credit demand in long term, 520
 - forecasting, 592–93, 618–42
 - foreign investors in, 540
 - foreign participation in U.S., 559
 - government involvement in, 553
 - intermediation in, 38
 - liberalization of, 572, 586*n.1*
 - and nonfinancial activity, 25
 - participants in, 402–4
 - postwar changes in American, 548
 - See also* Intermediation
- Financial programming, 112–13, 168–77
 - and expansion of central bank credit, 174–75
 - for Kenya, 175–77 nature of, 168–69
 - steps in, 170–75
 - techniques for, 169–70
- Financial statements, 7, 9, 17
- Financial structure diagram, 29–32
 - ambiguities in, 31–32
 - intermediation in, 30
 - purpose of, 32
 - reverse flow of funds, 30–31
- Fiscal policy, 171, 436–41, 442, 601, 613
 - and business capital formation, 439
 - debt financed, 439
 - Indonesian, 683, 684–85
 - and interest rates, 524, 525
 - and saving-investment process, 513
- Fisher, Irving, 8, 96
- Flow-of-funds, 3–6
 - changes in field, 3–4
 - early data consolidation, 4
 - early uses of, 4
 - meeting with model building, 4
- Flow-of-funds accounts, 3, 79
 - basic principle of, 51–52
 - and business fluctuations, 124–38
 - as capital account for the economy, 20
 - chart matrix, 593
 - as component of a system, 50
 - concept of, 19–46
 - and consumer durables, 58
 - cyclical expansion in, 14–15
 - and data assembly, 181
 - data consolidation phase, 4
 - flow/stock relations, 106
 - focus on saving/investment, 105
 - origin of quarterlies, 104
 - defined, 8
 - dependent on outside data, 50, 51
 - development of, 101–8
 - discrepancies as sources of inequalities, 51, 52
 - and econometric model building, 4
 - equalities in, 51
 - estimating simple system of, 185–94
 - for banking, 189–90
 - data sources, 185–90, 191–92
 - expanding, 192–94
 - matrix format for, 187
 - tightening, 190–92
 - as extension of income and product structure, 20
 - financial/nonfinancial linkage in, 20
 - financial surpluses and deficits in, 650–51*nn.1, 2*
 - first use of, 99

Flow-of-funds accounts (*continued*)

- as framework for financial analysis, 115–23
- functions of, 49
- and gross investment, 59–60
- historical relationships in, 32–45
 - borrowing and debts outstanding, 35–37
 - borrowing and investing, 33–35, 36
 - corporate equity holdings, 41–43
 - and credit supply, 37–43
 - deflation of data for, 32
 - and reserve assets, 43
 - sector drift in holdings, 41, 42
 - shift from government to private debt, 42–44
 - total holdings and GNP, 40–41
- hydraulic approach to, 8
- hydraulic versus electrical analogy, 87–88
- institutionalist origins of, 83–91
- and intermediation, 25–26
- for Kazakhstan, 716–17
- for Kenya, 196–208
- and macroeconomic modeling, 359–65
- major changes in, 3–4
- model structure of, 20–23
- monthly debt aggregate in, 60, 62–63
 - construction of, 62
- movement toward financial accounts in, 103–4
- vs. national income and product accounts (NIPA), 17–18, 57–60, 105
- consumer durables, 58
- government insurance reserves, 58
- treatment of gross investment, 59
- treatment of gross saving, 58
- nature of, 3
- and policy making, 592, 666
- present U.S., 49–75
 - key financial developments in, 66–73
 - debt to GNP ratio, 66
 - decline of depositories, 73
 - rise and fall of debt, 66–73
 - sources of credit, 73
 - organization of, 63
 - overview of accounts, 49–63
 - scope of, 49–50
 - sector groupings, 63, 64
 - transaction categories, 63, 65
 - uses, 63

Flow-of-funds accounts (*continued*)

- projections, 112, 140–48
 - assumptions in, 145, 146–47
 - length of, 145
 - matrix oriented, 594
 - nature of, 140–41
 - and policy formation, 144–46
 - private versus central bank, 145–46
 - procedure for, 142–44, 146–47
 - purpose of, 145–46
 - quality and usefulness of, 147–48
 - single-sector, 144
 - of unusual situations, 144
 - uses flow-of-funds system as a whole, 112, 142
 - versus forecasting, 145
 - publication sources, 50
 - purpose of, 19
 - quadruple-entry system, 8, 13, 22, 98
 - and quantity theory of money, 5
 - and quarterly accounts, 104
 - readjustment processes in, 128–29
 - scorekeeping function of, 126
 - sector summaries, 133–38
 - sector table structure, 52, 53
 - statistics, low quality of, 107
 - statistical discrepancies in, 107–8
 - stock relationships in, 106
 - and stocks and flows, 25
 - summary tables, 27–29, 81
 - treatment of gross savings in, 58–59
 - and U.N. System of National Accounts (SNA), 50, 313–22
 - worksheet system, 181–82, 210–36
 - for World War II, 496, 498, 499
- Flow-of-funds analysis, 3
- Flow-of-funds matrix, 20–23, 52–57, 99
- analytic role of, 23–25
 - and forecasting, 24–25
 - and government borrowing, 23–24
 - and individual choice, 24–25
 - and money supply increases, 24
 - and intermediation, 25, 26
 - basic constraints in, 21
 - condensed, 153–54
 - detailed, 52, 54–55
 - discrepancies in, 191
 - earliest stage of, 185–86, 187
 - and event analysis, 53, 57
 - financial/nonfinancial distinction in, 20
 - and financial structure diagram, 29–32

- Flow-of-funds matrix (*continued*)
 ambiguities in, 31
 intermediation in, 29, 30
 foreign sector in, 22, 23, 188–89
 government budget in, 21–22
 for Indonesia, 668, 670–71, 672
 memo column, 22, 23
 in an empirical model, 367–77
 impact of nonfinancial cycles, 374–7
 monetary policy impact, 374, 376
 submodel assembly, 372–73
 submodel description, 368–72
 and primary credit flows, 27–29
 and projections, 142, 148
 savings breakdown, 188
 and savings-investment process, 29–32, 152–55
 simplified, 52, 56
 summary tables for, 27–29
 and System of National Accounts, 269
 for whole economy, 121–23
 Flow variable, 210–11, 213
 FNMA. *See* Federal National Mortgage Association
 FOMC. *See* Federal Open Market Committee
 Foreign exchange market, 572–78, 586
 regulatory constraints on, 577–78, 579–80
 FRB-MIT model, 361
 Freedom of Information Act, 591
 Free reserves, 360, 381–82, 387–88
 and money-supply bank assets, 410–11
 Friday, David, 94
 Friend, Irwin, 103
F-test, 213–14
 Full Employment and Balanced Growth Act (1978), 62, 64, 594
 Funds rate, 411
 Futures market, 576
- General equilibrium model, 363, 446–66
 asset demand equations, 456–60
 balance equations and endogenous variables, 450–54
 empirical model matrix, 450–53
 financial block simulation, 460–66
 debt management, 463, 464
 open market operations, 461, 462
 Regulation Q ceilings, 465–66
 reserve requirements, 461, 462
 stock market intervention, 464, 465
- General equilibrium model (*continued*)
 partial adjustment assumption in, 461
 sectors and behavior, 454–56
 use of “priors,” 458, 460
 verbal description, 446–48
General Theory (Keynes), 89, 90
 Ghana, 238–43
 combined balance sheet, 241
 operating surplus derivation, 242
 sources and uses statement, 243
 Glass-Steagall Act (1933), 543
 Global capital account, 259–61
 discrepancies and adjustments, 255
 GNMA. *See* Government National Mortgage Association
 GNP. *See* gross national product (GNP)
 Godeaux, Jean, 253
 Goldsmith, Raymond, 103
 Gold standard, 558
 Government finance statistics, 196, 197
 Government National Mortgage Association (GNMA), 556
 “Greenbook”. *See* *Current Economic and Financial Conditions*
 gross national product (GNP), 40–41, 66, 560, 602, 603, 605–6, 614, 686
Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation, 305–6
 Gulf War, 666, 667, 672
- Hamilton, Walton, 94
 Harmonization, 269, 342–54
 Hedge funds, 577, 578, 584, 587*n.5*
 Historical data analysis, 491–93
 Hoarding, 119
 passive and active, 131–32, 139*n.4*
 Households, 284, 307–8, 687, 690
 asset levels, 561, 609–10
 claims on insurance and pension reserves, 536
 debt levels, 71, 73, 560
 direct equity holding, 537
 in general equilibrium model, 454–55
 holdings of nonintermediated debt, 536
 in Kazakhstan, 710–12
 market transactions view of, 282–90
 net acquisitions of assets by, 539
 payments and balances statement for, 9–12
 portfolios, 412, 536–37, 538

- Households (*continued*)
 savings and capital formation, 268–69,
 282, 284–90
 worksheet method for, 218–26
- Housing, 284–85, 569, 604, 626–28, 636
 construction, 622–23
 credit, 528
 demand, 413–14
 owner-occupied, 286, 309–10
 residential construction equation, 414–15
See also Mortgages
- Humphrey-Hawkins Act. *See* Full
 Employment and Balanced Growth
 Act
- IFS. *See* International Financial Statistics
- IMF. *See* International Monetary Fund
- Imputations, 17, 102
 conversions from NIPA, 102
- Income, 9, 168, 171
- Income-and-product projections, 141
 for consumer sector, 142–43
See also National income and product
 accounts
- Income and Wealth Conference (1959),
 106
- Income statements, 118
- Indifference analysis, 84
- Individuals' Saving* (Friend and Natrella),
 103
- Indonesia, 593, 666–81, 682–85
- Indonesia, financial policy brief, 666–81
 balance of payments, 682, 684, 685
 banking system, 683
 fiscal policy, 683–85
 fixed capital formation, 682, 684, 685
 inflation, 683
 monetary and credit policy, 683–85
- Indonesia, saving-investment process
 analysis, 666–681
 banking system, 673–74, 678, 679–80
 borrowing and lending sectors, 667
 capital inflows and outflows, 680–81
 Central Government sector, 669, 672
 credit policy, 678–81, 685
 financial flow matrix, 668, 670–71, 672
 fixed capital formation, 666–67, 676
 intermediation, 678
 monetary and credit policy, 678–81
 other domestic sector, 672–74, 675–76
 reserve analysis, 677, 678
- Indonesia, saving-investment process
 analysis (*continued*)
 reserve ratio, 679
 rest-of-world sector, 669, 672
 sector savings, 669
- Inflation, 415, 531, 534, 563, 611, 687
 and asset returns, 540
 in Indonesia, 683–84
 in Kazakhstan, 700, 701, 715
 misconceptions about, 13–14
 risk, 538
 as threat to economy, 621–22
- Information costs, 536
- Innovation, 448
- Institutional investors, 572–73, 574, 576,
 577, 584–85
- Institutionalism, 80, 90, 94
 defined, 84–85
- Insurance companies, 73, 303–6, 371, 373,
 374, 578, 690
 casualty, 304
 intermediation by, 26, 549
 life, 304–5, 424*n*.5, 536, 549–52, 620,
 626, 631–32
 assets of, 550
 property liability, 620, 631
- Interdealer transactions, 577
- Interest parity assumption, 469
- Interest Rate Control Act (1966), 555
- Interest rates, 39–40, 107, 382–83, 398,
 411, 520–34, 606, 607
 and business investment, 566
 ceilings on deposits, 528, 568
 and consumer spending, 567–68
 and credit market flows, 525–28
 differentials on Eurocurrency deposits, 583
 distributed lags on past, 431
 emergence of real positive, 621
 expectational theories of, 412
 and financial flows analysis, 520–34
 interest rate movements, 523–25
 long-term rate movements, 531–34
 total borrowing, 525–26
 sectors supplying, 527–28
 short-term rates and monetary
 aggregates, 528–31
 and financial market projections, 633
- Indonesian, 680
- Japanese, 661
- on life insurance, 550
- long term rates, model of, 427–42

Interest rate (*continued*)

- long-term rates, movements in, 531–34
 - business borrowing effects, 434
 - and demand-supply model, 427–42
 - determination of, 429–35
 - disintermediation effects, 434
 - fiscal policy simulation, 436–41
 - investable cash flow effects, 434
 - and nonfinancial behavior of MPS model, 435–36
 - perceived risk effects, 435
 - portfolio diversification effects, 434
 - and single term structure equation, 428
- in securities markets, 520
- short term, 430, 439, 686
- subperiods of rising and falling, 523–25
- summary data for change periods, 522
- term structure of, 388–89
- World War I, 495

Intermediation, 27–29, 112, 141, 143, 151, 334, 339, 403–4, 492, 535–53, 593

- advances in, 535–42
- ambiguities in concept of, 31
- and analysis, 26
- and asset demand, 457
- bank, 167
- and credit market lending, 28
- defined, 25–26
- direct claims on nonfinancial entities, 541
- in financial markets, 38
- in foreign exchange markets, 577
- growth and change in, 107, 535–53
- in Indonesia, 674, 678, 680
- in Japan, 645–46
- in mortgages, 555
- nonbank, 165, 167, 547–49
- nondeposit, 549–52
- and primary credit flows, 25–26
- and regulation and innovation, 448
- and saving-investment process, 514, 517
- and saving theory, 283
- and source-use analysis, 164–67
- specialization in, 26, 543–52

International capital flows, 141, 183, 253–62, 364

- actions needed in, 261
- concealed, 258
- countries ranked by reported, 262
- direct investment, 255–56
- discrepancies, 253–54, 259
- and adjustments, 255, 257–58

International capital flows (*continued*)

- and European currency crisis, 571–86
- and exchange rates, 468–84
- findings for major categories of, 254–59
- flow-stock view of, 472
- foreign exchange markets, 572–78
- foreign exchange reserves, 259
- improving data on, 261–62
- measuring, 183, 253–62
- overall statistical results, 259–62
- portfolio investment, 256
- private versus official, 254
- prospects and costs, 261–62
- See also* International debt

International capital markets, 254**International debt**

- cancellation or forgiveness of, 349–51
- and currency swaps, 346–47
- data on, 344–45, 351
- and exchange rate conversions, 345–48
- main elements of reconciliation of, 344–54
- and market value changes, 348–49
- multiple rescheduling, 354
- provisions and write-offs, 351–52
- and rescheduling, 352–54
- and restructuring, 352
- stocks and flows, 342–54
- See also* International capital flows

International Financial Statistics (IFS), 296, 297, 301**International Monetary Fund (IMF),**

- 112–13, 183, 299, 342, 343, 344–45
- Working Party establishment, 253–54

International Working Group on External Debt Statistics (IWGEDS), 342, 344

- members of, 343–44

Inventory boom, 375–76**Investment, 59–60**

- business fixed, 566, 567, 569, 604, 623
- direct, 255–56
- financing of, 505–7
- institutional, 572–73, 574, 576, 577
- international portfolio, 573
- inventory, 604
- Japanese, 643–45
- in Kazakhstan, 706, 708
- portfolio, 256
- in producers' equipment, 567
- in real estate, 620
- real versus financial, 118

Investment (*continued*)

- residential, 564–65
- shift in private, 38–40
- See also* Assets; Credit;
- Saving-investment process

IWGEDS. *See* International Working Group on External Debt Statistics

Japan, 573, 593, 643–65

- asset accumulation changes, 649–50
- asset price-steep rise phase, 647–49
- factors underlying, 648
- current account surplus, 651*n.3*
- economic downturn, 643
- financial market matrix, 645, 656
- financial surpluses and deficits, 643, 646–47
- flow-of-funds from/to overseas sector, 644
- foreign investment in, 645
- fund intermediation in, 645–46, 656–57
- fund raising and investment, 643–45, 646–49
- in corporate business sector, 647
- in personal sector, 647
- interest rates and lending attitudes, 648
- plunge in intermediation, 645

Jorgenson, Dale W., 435

Junk bonds, 71

Kaufman, Henry, 106–7

Kazakhstan, 594, 700–717

- balance of payments in, 708–10, 716
- basic accounts for, 720–21
- budget deficit, 702
- consolidated government budget, 704–7
- consumption in, 710–12
- credit policy, 702, 715–16
- currency appreciation in, 710
- current account deficit, 708
- direct foreign investment in, 708
- economic policy objectives, 700
- extrabudgetary funds, 704
- flow-of-funds accounting framework, 716–17
- foreign exchange reserves, 702, 708, 710
- funds matrix, 716–17, 718–19
- investment in, 706, 708, 710–12
- monetary sector trends, 701–2, 704
- money to GDP ratio, 702
- origin and use of resources, 710–12
- production, prices, and employment outlook, 701

Kazakhstan (*continued*)

- “rest of economy” account, 712–15
- subsidies, 706
- tax revenues, 707, 716

Kendrick, John W., 270, 270*n.1*, 270*n.5*

Kenya

- account estimates for, 196–208
- data sources, 196–98
- balance of payments summary, 205
- central government budget operations, 200, 201
- financial program for, 175–77
- IMF accounts for, 196–97
- income-expenditure and financial transactions, 206–7
- income and flow-of-funds account summary, 208
- monetary survey for, 202
- national account data, 199
- summary accounts of commercial banks, 204
- summary accounts of monetary authorities, 203

“Key Features of the Money Circuit” (Copeland), 88

Keynes, J.M., 8, 89, 90, 359, 397

Keynesian economics, 359, 512–13, 519

“Keynesian Reformation, The” (Copeland), 90

Klein, Lawrence, 360

Klein-Goldberger model, 359–60

K-L method, 214–15

Kuznets, Simon, 97

Labor, division of, 84–85

Labor market, 454, 612

Level variable, 210–11, 213

Liabilities, 117, 119–20

Life-cycle hypothesis, 283, 288, 290

Life insurance. *See* Insurance companies, life

Life Insurance Association of America, 141

Liquidity, 405, 406, 448, 573

Liquidity preference equations, 360, 510

Liquid securities, 402, 403, 572

Loanfunds payable, 12, 13

Loanfunds receivable, 12, 13

Loans

- negotiated, 402, 403

See also Mortgages

Lützel, Heinrich, 277–81

- Maastricht Treaty, 583
 Macroanalysis, 140
 Macroeconomic modeling, 359–65, 493
 Mail float, 16
 Main money circuit (Copeland), 87
 equations of, 126–27
 key features of, 124–27
Manual on Monetary and Financial Statistics (INF), 184
 Manufacturing sector, 282
 Market clearing, 429–30
 Marwah/Klein model, 364–65, 468–84
 McAdoo, William G., 495
 Mexico, 343
 Mineral rights sales, 60
 Model analysis and flow-of-funds accounts, 359–65, 591
 Monetary aggregates, and interest rates, 528–31
 Monetary analysis, 276
 Monetary gold stock, 16–17
 Monetary models, 468, 469
 Monetary policy, 171, 376, 442, 447, 465, 601, 613
 and commercial banks, 632–33
 and fiscal policy, 436–41
 and flow-of-funds projections, 146
 and GNP growth, 605–6
 impact on real output, 417–18
 Indonesian, 678–81, 683, 685
 influence on economic activity, 554–69
 and interest rates, 523, 524, 528
 loanable funds view of, 510
 report to U.S. Congress, 686–99
 and saving-investment process, 508, 509–12
 spending component sensitivity, 563–68
 Monetary surveys, 170–71, 196
 defined, 197
 for Kenya, 202
 Monetary theory reformulation (Copeland), 124
 Money
 demand function, 171
 income velocity of, 530–31, 545, 546
 role of, 79–80
 sources and dispositions of, 13
 stock, 156, 529–30, 531, 605–6
 supply and demand, 172
 See also Quasi-money
 Money circuit. *See* Main money circuit
 Moneyflows
 accounting for changes in, 132
 defined, 8
 and deposit creation, 13–14
 financial statement for, 9
 sectors in, 12
 social accounting for, 7–18
 vs. national income and product accounts, 17–18
 See also Flow-of-funds accounts
 Money market funds, 632
 Money Market Securities, 679
 “Money Stock, Liquid Assets, and Debt Measures”, 62
 Month-average series, 62–63
 Mortgages, 107, 367, 528, 545, 548–49, 555–57
 borrowing, 372
 demand, 459
 equations, 413–14
 financial market projection of, 626–28, 636
 and insurance companies, 371
 intermediation of, 555
 pools, 553, 556, 569*n*.3
 purchases by FNMA, 419–20
 rates, 622
 record volume, 690
 secondary market in, 556, 564, 568, 626–27
 takedowns, 630
 See also Housing
 MPS model, 362–63, 428–29, 433–35, 442, 563
 influence of interest rates, 435–36
 simulations of, 437–41
 Multicountry models, 364–65
 Mutual funds, 73, 537, 549, 573, 575, 578, 584–85, 688, 690, 694, 696
 Mutual savings banks, 547–48, 555–56, 631
 National Bureau of Economic Research (NBER), 86
 National income, 9
 rate of growth, 171
 National income and product accounts (NIPA), 3, 17–18, 49–50, 57–60, 79, 97, 267
 accrual basis of, 197
 alternative approach to, 275–77

- National income and product accounts (NIPA) (*continued*)
 - boundaries in, 272
 - and consumer durables, 58
 - Copeland's view of, 267
 - core, 268
 - data from, 186, 188
 - data types currently submitted, 318, 319
 - and flow-of-funds accounts, 17–18, 57–60, 105
 - functional versus institutional approach, 272–73
 - and gross investment, 59–60
 - imputation list, 102
 - purposes of, 271–74
 - revisions in, 212
 - saving and investment sector allocation, 60, 61
 - treatment of gross savings in, 58–59
 - World War II, 496, 497
- Natrella, Vito, 103
- NBER. *See* National Bureau of Economic Research
- Negotiated loans, 402, 403
- Net worth, 118, 297
- New SNA 1993, 269
- NIPA. *See* National income and product accounts
- Nonprofit institutions, 286
- ODA grant, 350, 352
- OECD. *See* Organization for Economic Co-operation and Development
- On the merits of borrowing, 80
- Open market operations, 393–94, 409, 465
- Optimal marginal adjustment model, 432–33
- Options market, 576
- Organization for Economic Co-operation and Development (OECD), 342, 343, 345, 346, 350
- Outstanding. *See* Level variable
- Pension funds, 73, 269, 282, 284–87, 536, 537, 549–52, 573, 578, 620, 626
 - assets of, 550
 - foreign investments in, 575
 - insurance companies and, 303–6
 - in Kazakhstan, 705–6
 - state and local government, 551
- Permanent income hypothesis, 283, 288
- Peso problem, 587*n*.8
- Policy analysis, 591–94
- Portfolio
 - adjustment theory, 363
 - balance models, 468
 - equations, 412
 - household, 412, 536–37, 538
 - selection model, 404, 432–33, 457–58
 - theoretic model, 469
- Position. *See* Level variable
- Postwar recoveries, 603
- Prices, 172
- Price-volume equation, 126–27
- Primary credit flows, 27–29
 - and intermediation, 25–26
- Production boundary, 272
- Project LINK, 364
- Public utilities, 282, 624
- Quadruple-entry concept, 13, 15, 22, 98
- Quasi-corporate enterprises, 297, 307
- Quasi-money, 172, 680
- Ratio method, 215–16
- Recent Economic Developments* (IMF), 591
- Recessions, 517, 563
- Reconciliation account, 292, 298–301, 311
 - and nonfinancial asset quantity changes, 300
 - and price change revaluations, 299
 - and special drawing rights, 299–300
 - summary of, 300–301
- Reconciliation tables. *See* Bridging tables
- Regulation, 448, 577, 578, 579–80
- Regulation Q, 465–66, 555, 556, 568, 569*n*.3
- Required reserves, 381–82, 387
- Reserves identity equation, 360, 384
- Retirement Income Security Act (1974), 551
- Revaluation account, 298, 300, 327
- Revalued paid-in value, 297
- Revenue and Expenditure Control Act (1968), 523
- Riefler, Winfield, 101
- Risk, 405, 435, 536, 537–38
- Risk premiums, 610
- Ruggles, Richard and Nancy, 268–69

- Saving-investment process, 4, 29–32, 112,
141, 149–55, 283, 290, 492
analysis of, 504–19
exploratory hypothesis for, 504–5
and investment financing, 505–7
role of financial institutions, 507–9
and federal financing, 512–15
monetary policy impact, 509–12
and saving placement, 515–18
and Bosworth/Duesenberry model,
399–400
and flow-of-funds accounts, 340
identity equation, 400
in Indonesia, 666–81
measuring, 149–55
scheme for, 149–52
matrix for statistical specification,
152–53
schematic view of, 149, 150
- Savings, 58–59, 103, 118, 282, 529–30,
620
as balancing item, 326–27, 334
personal, 283–85
in sector income statement, 116
theory and measurement of, 283–85
- Savings and loan associations, 555, 610,
612
intermediation by, 26, 547–49, 553
savings inflows compared to mortgage
lending at, 631
- Scientific hypotheses, 84
- Scudder, Stevens, and Clark, 141
- SDRs. *See* Special drawing rights
- Seasonal adjustments, 212–14
formula for, 216–17
- Sector accounts, 97, 98
for adjustment programs, 113
generalized income, 115–16
initial derivation of, 188
- Sector projections, 142
- Security markets, 20
- Self-financing, 141
- Sheep, 15, 88, 132–33
- Sigel, Stanley, 104
- Silber, William L., 442
- Smith, Adam, 96
- SNA. *See* System of National Accounts
- Social accounting, 5–6, 361
Copeland's contributions to, 93–99
defined, 3
and economic statistics, 5
- Social accounting (*continued*)
and economic doctrines, 5–6
and econometric method, 5
in financial programming, 113
systems of, 86
use of, 8
- Social sciences, 84
- Social security, 285, 306–7, 537
- Source and use analysis, 112, 156–67
basic approach to, 156–57
direct credit and expenditure model,
162–64
expenditure without credit model,
160–62
and financial surpluses and deficits,
158–59
and intermediation, 164–67
outline of theory, 159
- Sources, 13, 111
defined, 120
equation for total, 157
- Sources and uses of funds statement, 9,
115–121, 124–25, 190
assembly into matrix, 121–23
basic data, 238
derivation of, 115–21, 240
converting balance sheets to flows,
117–20
income statement/balance sheet origin,
115–117
entrants, exits, mergers, 240
estimation of business, 238–43
fiscal year assignment, 239
fiscal year end changes, 239–40
for Ghana, 243
for Kazakhstan, 716–17, 718–19
sample selection, 238
standard accounts, 239
surplus adjustments, 240
transcriptions, 239
for World War II, 498, 499
- Soviet Union, 700
- Special drawing rights (SDRs), 59, 75*n*.3,
299–300
- Spending, 563–68, 604
- Statement of payments and balances, 9–
12
- Stewart, Walter, 86, 93–94
achievements, 93
- Stocks, 123*n*.1
valuation of, 16

- Stocks and flows, 25
 and economic equilibrium, 25
 Stock variable. *See* Level variable
 Stone, Richard, 97
 Structure change in FRB-MPS model, 554–69
 recent economic developments, 555
 residential finance, 555–57
 openness of the economy, 557–60
 business indebtedness, 560–63
 shifts in model equations, 563–68
Study of Moneyflows in the United States, A (Copeland), 86, 267
Study of Saving in the United States (Goldsmith), 103
 Subsidiaries, 297
 Subsidies, 706
 Sumarlin shock, 680
 Surplus sector, 119, 121, 123
 System of National Accounts (SNA), 50,
 97, 267, 268, 274–81, 324–41
 accumulation accounts, 327, 330–31
 balance sheet structure, 295–98, 327, 333
 balancing items in, 325–27, 334
 core and module approach to, 275–77
 current accounts, 329–30
 data for, 318–19, 322
 Dutch proposal for, 267, 271–77, 279
 and economic activities, 325–27, 333
 external transaction account, 314
 finance and evolution of, 313–19
 standard accounts and, 313–317
 financial accounts in, 291–301, 333–41
 counterparts of, 337–38
 detailed financial accounts, 338–41
 role of, 333, 334, 337
 financial transactions classification in, 320, 333, 336
 and flow-of-funds accounts, 313–22
 flow-of-funds matrix for, 269
 flow-of-funds representation in SNA 1993, 319–22
 as framework for international guidelines, 275
 French system of, 279
 German system of, 279
 as handbook of national accounting, 275
 and household durable goods, 294
 implementation of, 325
 income accounts, 326–27
 integrated economic accounts, 328–32
- System of National Accounts (SNA)
(continued)
 financial institutions, 301–6
 and owner-occupied housing, 309–10
 quasi-corporate, 307–8
 social security subsector, 306–7
 and international comparability, 274
 and international debt, 348–49
 1953 version of, 313–15, 318
 1968 version of, 315–17, 318, 322
 1993 version of, 318–19
 and nonreproducible assets, 293–94
 production account, 326
 purposes of, 271–75
 reconciliation account in, 292, 298–301
 revision of, 75*n.1*, 269–70, 291–311
 balance sheet structure in, 295–98
 financial institutions in, 301–6
 financial issues in, 291–311
 household durable goods in, 294
 institutional sectoring in, 301–10, 316–17
 noncorporate enterprise in, 307–8
 nonreproducible assets in, 293–94
 and owner-occupied housing in, 309–10
 reconciliation account in, 292, 298–301
 social security subsection in, 306–7
 stock and flow consistency in, 292–4
 sequence of accounts in, 326–27
 system modules, 268, 275–77, 279–80
 transaction types, 320–21
- Taxes, 561–62, 629–30
 Taylor, Stephen P., 6, 80
 computer program design, 80
 design of summary tables, 80
 keeping data up-to-date, 80
 Technical transactions, 17
 Theil-Goldberger mixed estimation technique, 458
 Time deposits. *See* Deposits
 Time series, 182, 210
 and bridging tables, 244
 Tobin, James, 361
 Top-down method, 272
 Trade credits, 338, 538
 Trading up, 628
 Transactions, 8, 98, 310
 categories of, 63, 65, 98
 costs, 536, 573
 interdealer, 577
 technical, 17

- Transactor discretion, 14–15, 80, 88–89, 111, 124–26, 504
See also Discretionary hypothesis
 Transactor-transaction principle, 276
 Treasury debt. *See* Federal deficit
- Unborrowed reserves, 381–82, 394, 416–19
- Unemployment, 7, 602, 612, 614, 686, 701
See also Employment
- United Kingdom, 578
- United Nations, 50, 97
- United States, 573
 average maturity of Treasury debt, 698
 business debt, 69–71
 credit flows, 66–75
 credit sources, 73
 debt to GNP ratio, 66
 debt levels, 66–73, 689
 depository institutions, 691–93
 domestic bank assets, 696
 domestic corporate and foreign bonds sold, 637
 domestic nonfinancial debt and depository credit growth, 695
 flow-of-funds accounts for, 49–75
 foreign participation in financial markets, 559
 foreign purchases from, 250
 GNP growth, 602, 603, 614, 686
 government securities defined, 423*n.1*
 household sector in, 282–90, 690, 692
 deposits as percent of assets, 693
 M1, M2, M3 growth rates, 688, 693–698
 measurement of personal savings in, 284–85
 monetary and debt aggregate growth, 688, 699
 monetary policy, 686–99
 and economic outlook, 686–99
 money and credit flows, 689–99
 nonfinancial sector finances, 689
 recent development in economy, 555–63
 state and local debt, 69
 trade balances, 557–59, 569
See also Federal deficit
- Uses (dispositions), 13, 111, 118
 defined, 120
- Value theory, 94
- Vanoli, André, 277–81
- Veblen, Thorstein, 79, 94
- Walka, Anna, 393
- Wealth distribution, 309
- Wharton model, 361
- Worksheets, 181–82, 210–36
 for checkable deposits and currency, 227–36
 coverage periods, 211–12
 data revisions, 212
 discrepancy/ 182
 dollar values, 218
 extrapolation, 216–17
 flows and levels, 210–11
 for household sector, 218–26
 interpolation, 214–16
 line numbering and subentries, 217
 seasonal adjustment, 212–14
 series breaks, 211
 source column, 182
 system, description of, 182
 terminology of, 217–18
 time series, 210
- World Bank, 342, 344, 345
- World Debt Tables*, 354
- World War I, 95, 495
- World War II, finance of, 495–502
 fear of rising interest rates, 495
 flow-of-funds view of, 496–98
 misconceptions regarding money creation, 495, 500
 national security expenditures during, 496
 policy misconceptions, 500–502
 supply of funds increase, 498
- X11ARIMA/88 procedure, 213
- Yield, 405, 492
- Young, Ralph, 101

About the Editor

John C. Dawson's research in applied flow-of-funds analysis began with doctoral study under Morris Copeland at Cornell University in 1948. It continued at the Brookings Institution and during sabbatical years at the Federal Reserve Board and the Bank of England. In the past twenty years he has undertaken a variety of World Bank and U.S. AID missions deriving and analyzing flow-of-funds data in Third World countries in Africa and Asia. Throughout his career he has been an undergraduate economics teacher, primarily at Grinnell College in Grinnell, Iowa.

